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CONTENTS.

Editorial 221
Meeting an Emergency. By Percy G. Robinson.....223
Central Office Locations. By S. D. Levings 225
A Time Saving Code for Party Line Ringing.....227
Mountain Telephone Construction 228
Explanation of Accounting System for Nebraska Telephone Companies. (Concluded) 230
The Prevention and Defense of Damage Suits. By William S. Hart 233
Experiences of the Readers 236, 237
Legal Matters and Decisions. By A. H. McMillan.....237, 238
Answers to Practical Questions.....238, 239
Notes from the Field.....240, 241, 242
Patents Relating to Telephony. By Max W. Zabel...243, 244, 245
From the Factory and Salesroom.....245, 246, 247
Condensed News Reports.....247, 248, 249, 250

When Success Brings Failure

Men of all ages have looked up to others who have achieved success. Exactly what is meant by that word is hard to define, for it varies with the ideals of the individual. But one thing is certain, a man may achieve what others term success, but if he becomes aware of it himself, he is likely to fall. One of the conditions of the successful life is that it is always on the up grade. There is always before the successful telephone man something better which he is striving to do or attain. A lower maintenance expense, a more satisfactory service, a better organization, a cleaner record—whatever it may be, it is his heart's desire. When that is reached his vision goes beyond to something better.

Let him become possessed of the idea that he *is* successful his upward march is stayed. The impetus is gone, his ambition satisfied. After complacency comes neglect, and decay sets in. The momentum of his previous advance may maintain him for a while, but sooner or later people discover that his old time power is gone and eventually his sun goes down.

And the remedy?

Have definite objects. When you fail, find out why and don't make the same mistake twice. When you succeed, digest the cause and the effect, learn the lesson which it has to teach, and then forget it. Don't gloat over your achievement. The less you think about it the better. You have really scarcely made an impression on the problems before you. Quickly take up the next one and lose yourself in it.

Limit of Accuracy in Fault Location.

In locating a fault, it is well enough to know just what accuracy can be expected. The testing instrument, generally a Wheatstone bridge, is the best part of the system. A good bridge can be relied on to one part in five hundred, or one-fifth of one per cent. The lengths of the conductors tested are not usually known to this degree of precision, which would mean eleven feet in a mile. Some of the connections may have small but appreciable resistances, due to a little dirt or grease that can easily come from the splicer's fingers. This will introduce an error. If one side of the loop is in the inner core of the cable, and the other side in the outer, an error will appear. It is useless, then, to speak of locating a fault "to a foot," as many cable men do, and tell of measuring the lengths "on horse back" in the next breath. A measurement is as fine as the most

inaccurate factor. Under the most favorable circumstances, an accuracy of one-fifth of one per cent may be attained, but it is safer generally to claim one per cent.

That Delayed Installation.

Prompt attention to the wants of customers is one of the prime conditions of successful modern trade. The true business man with good judgment and an eye for the needs of his customers, loses no opportunity to make his dealings prompt and satisfactory. In the open market there is a great incentive to be prompt, for if neglected, the customer will go elsewhere in making future purchases.

But in the case of the telephone, the subscriber often has no other place to go. He must take your service or none at all. No good manager will allow this condition to affect his activity in installing new orders and taking care of incidental business.

It must be recognized that there are unavoidable delays. Every business has them. Suitable instruments may not be at hand, the wire plant may be crowded, or you may be temporarily short of help. The larger the company the more the necessary "red tape" in getting a matter put through to completion, yet there are many cases in which unnecessary delays occur. Perhaps it is near the close of a day. This little matter of business could just as well be attended to now as later. But if it is let go till morning, some other thing may get in ahead and the more important matter be unduly delayed. Some one says: "I'm not going to be worked to death right up to quitting time," so over it goes till tomorrow. When the question comes up "Shall I do it now or later?" too many decide it on the basis of personal feeling.

The controlling sentiment should be: What is best for the company and its business? For what is best for the group of workers is best for each individual. Don't think of the company as apart from yourself, you are a part of each other.

If each man thus does his part promptly and well, the business and all concerned will prosper as never before.

The Value of a Pleasant Voice.

Two telephone operators sat talking in the recreation room of a large telephone exchange where nearly one hundred and fifty girls found employment. One, glancing at the clock arose hastily and, adjusting her headset, said in an irritable voice, "There, I must go, my relief time is up but how I hate to go back into that operating room. It seems as if all the cranky subscribers in the exchange are gathered into my position."

"Oh, I don't think you have them all," replied the other in a pleasant voice, "I have a few of them in my position but they don't prevent me from enjoying my work. I give them the best service I can and there are so many pleasant subscribers which one likes to answer that I don't allow tne cranky ones to make me lose my temper." At this point the operators were interrupted by the ringing of a bell and hurried into the operating room.

How often one has heard the frequent user of a telephone say, "My but we have a saucy operator on this line. She doesn't even try to get your number," or, "We have the nicest girl on our line, she is so accomodating." Both of these operators are governed by the same rules, both must put through their calls in the same way, but each by her tone of voice, conveys a different impression to the subscribers. An operator demanding "number" in a short irritable tone and reporting "line busy" or don't answer" in the same manner, gives the subscriber the impression that she "does not even try to get his number," but, if after asking "number" in a businesslike way and repeating the number clearly, the operator finds it necessary to report "line busy" or "don't answer," the subscriber feels that his call has received due attention and is satisfied. The very fact that the number he is calling is busy, is annoying to the subscriber and, after calling several times and receiving the same short reply "line busy" in what seems to him an impertinent tone, he complains to the chief operator. Then the operator has a complaint marked against her record which could have been avoided by a pleasant voice. The phrases used by the operators are of necessity short and, when not repeated in a pleasant voice, are apt to sound impertinent to the person at the other end of the wire.

By cultivating a pleasant, businesslike tone of voice, the operator will enjoy as well as lighten her work. If she resolves each day, as she takes her position at the switchboard, not to grow impatient at anything that may turn up, the day will seem shorter and the work easier. If she is impatient with the subscribers they will be impatient with her and she will probably receive a reprimand from her supervisor, which will not sweeten her temper. Under the influence of a pleasant voice the crankiest crank will forget some of his crankiness.

Low Insulation.

The insulation resistance of an open wire line is somewhat indefinite, being high in dry weather and low in wet weather. In cable, however, it is different. Here a standard can be established. This standard is generally 500 megohms per mile. A single length of good cable has an insulation much higher than this.

Except in long cables, where clearness of transmission is to be considered, an insulation much below standard will not be noticed. In fact, a splicer, testing with a receiver, will often pronounce a line having an insulation resistance of 1 megohm good, and the ordinary wire chief's voltmeter will also show such a line "clear." Though comparatively low insulation does not cause actual "trouble" in a cable, it indicates a defective condition somewhere, either a hole in the armor or a bad splice. A short bend in the cable, if the wire be of large gage, may cause low insulation, or even a fault. When the armor of a cable is open, as at a splice, air will flow out and in as the temperature of the cable rises and falls. Moisture is thus sucked into the cable and lowers the insulation more than one would think in a very short time. When the insulation of a cable is much below standard, it is best to look for the cause before "trouble" really appears, for it is generally coming sooner or later.

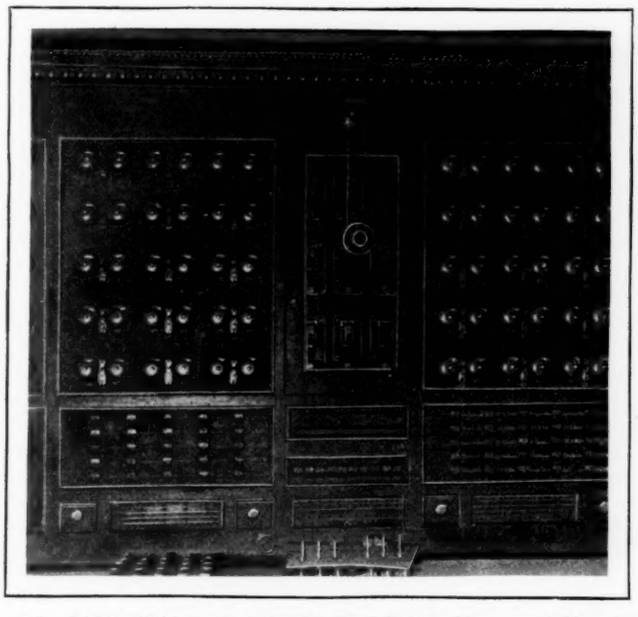
Meeting an Emergency in St. Paul

By Percy G. Robinson

By the explosion of a large acetylene gas tank, a part of a new invention by Alfred Kuhlo, to fill the small portable tanks or cylinders on automobiles with illuminating gas, six people, including the inventor, were killed, a dozen others seriously injured, and two two-story brick buildings completely wrecked at 3 p. m. July 31, 1909, at St. Paul, Minn.

The building in which the explosion took place, No. 81 West Third street, adjoining the St. Paul Central Police Station, was at once filled with the highly inflammable gas, and fire broke out immediately. The Central exchange of the St. Paul Police Alarm and Signal System was destroyed, and in consequence the Minnesota Capital was deprived of a valuable adjunct to its organized police protection.

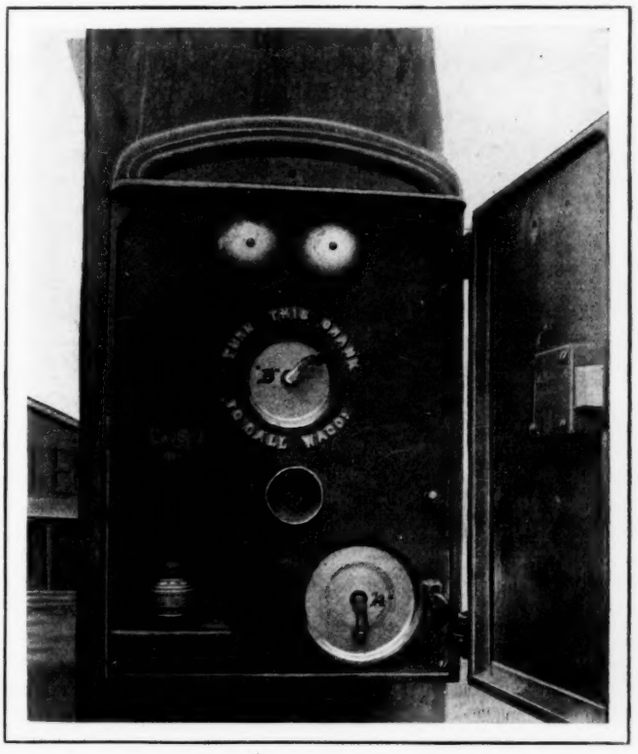
One of the most important factors in an efficient police system is the telephone, since information pertaining to crime must be acted upon at once to be of value. Time must be saved and can be saved by use of the telephone. It was imperative that the crippled police telephone system should be replaced at once. The Bell company offered to install a switchboard in about two weeks' time, but the Independent company was quick to seize the opportunity afforded, thus again showing its readiness for furnishing prompt service to the public. The company offered to install, not in two weeks, but at once, a switchboard that would carry the police alarm system. This offer was accepted and a regular private branch exchange switchboard was equipped and installed. Although all the police department's records were lost in the wreck, by strenuous work, the patrol boxes were connected to the new board within forty-eight hours. Temporary telephones, connecting the police department with the system of the Tri-State Tele-



The Old Switchboard of the St. Paul Police Alarm and Signal System.

phone and Telegraph Company, were installed almost before the smoke from the fire had died away.

The police system in use before the accident was installed several years ago, the board being equipped for fifty patrol boxes, using a 20-volt common battery talking circuit, and hand generators for signaling purposes. The switchboard, as can be seen in the illustration, which shows practically all that was saved from the wrecked exchange, was provided with separate bells for each box, with the trip arrangement on the bell clapper, well known for use with this form of signal. The patrol boxes used are equipped with a regular common battery talking circuit, while for

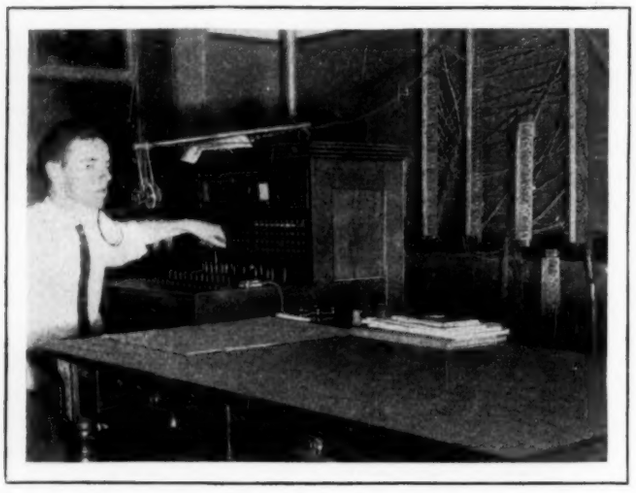


The Patrolman's Call Box.

signaling purposes, two hand generators are provided. By turning the generator crank shown at "A" in the illustration, the officer at the box would impress alternating current out on the line, and at the board would ring the bells, throw the trip and so indicate to the operator that he desired to converse, report in, etc. The crank marked "B" when turned would impress a pulsating current out on the line, and by ringing the bells, throwing the trip and in addition throwing the shutter corresponding to the line at the board, would indicate to the operator that the officer desired the patrol wagon. The shutters are shown in the side panels below the bells. This arrangement is a time saver, as the information that the patrol was wanted did not require the operator to put up a cord, or as might be the case, were the operator taking a report from another line, the officer with the urgent call would have to wait, whereas with this scheme, a wagon call is at once evident. When a wagon call came in from Box 25, for instance, the operator would "tap out the wagon" by means of a special telegraph key, closing the circuit on a single stroke gong, two taps, a pause, then five taps. This would call out the wagon in the same manner as a fire company.

In St. Paul, as in other cities, the telephone companies furnish to the police and fire departments cable conductors and line wires to connect the patrol boxes distributed throughout the city with the exchanges maintained by the respective departments. A fifty pair cable which connected the old board in the annex was cut off and pulled back into

a room in the rear of the Central Station. It was headed up on a terminal strip, and connected to a regular common battery private branch exchange switchboard. This board, shown in the illustration, is a lamp signal type, operating on 40 volts. When taken from the storeroom it was equipped with 18 lines, but by rapid work 60 lines were



The Emergency Switchboard Installed Within Forty-Eight Hours After Old Board Was Put Out of Service.

added. Fifty of these lines are used for the patrol boxes, and the remaining ten for local house lines, such as the desk sergeant, the chief, etc. Eight trunks were equipped, the circuits of which are arranged to operate on common battery lines with ringing locking relays locking in lamp signals, thereby allowing the same operation at the main board on subscribers' lines and private branch lines or trunks. Two of these trunks are used to bring in the lines from the telephone companies, one each connecting the police system with that of the Tri-State (Independent) and of the Northwestern (Bell) systems. Both systems being common battery with which the trunk was designed to operate, no change was necessary, but a slight modification was necessary in the circuit, however, to connect the various substations on this board. The desks or boards in the substations are of the same type as the destroyed board. It is obvious that these substations would have no trouble calling in on this trunk circuit, but as each line at the substation is provided with a ring-down drop, some means to ring back was necessary. Therefore a cut-off jack was installed in the circuit to cut off the private branch exchange signal equipment, and allow the operator to use the regular cord when calling a substation. Private lines to the fire alarm system, to the Minneapolis police system, etc., were also brought in on the trunks, so that the St. Paul Police Department may keep in touch with the Minneapolis department.

A slight change was necessary in the circuit of each of the patrol boxes in the central district. As the boxes were all generator call, a condenser had to be cut in series with the ringers. The generator cranks were also removed to prevent the officers from ringing into the line relays.

He Got His Price.

In different sections of western New York there are a number of telephone circuits known as rural lines which on a diagram would form a complete network, and on many of these circuits often twenty-five or more parties are connected. The lines in greatest proportion connect with the Federal Telephone & Telegraph Company's system, and one can scarcely imagine the numerous contingencies that often come to official notice through this condition. Not long ago a prosperous farmer was discussing a matter of price for some of his potatoes with a dapper buyer from the city. The farmer maintained that the buyer had quoted a certain price which the city man desired to back out of. Finding argument useless, the buyer said: "Well, my word is as good as yours; you cannot prove that price." The farmer smiled and said: "Young man, I'll bring twenty-two witnesses to prove my contention." The buyer declared that impossible, as the conversation was on a telephone and with no one present. "But," said the farmer, "my telephone is on a rural line."—*Century Telephone News.*

Watching Service in New England.

In keeping up the quality of service in the Boston and suburban exchanges of the New England Telephone and Telegraph Company, the manager of each exchange makes from three to four hundred tests each week, and a trained observer is continuously engaged in listening to the operators' work by means of special circuits. Also inspectors from the division office make periodical service tests, in the course of which they criticise each and every detail. The results of these tests are carefully tabulated and, where possible, are plotted graphically. Any weak features are thus pointed out for correction, and the strong ones are emphasized as standards of attainment.

Criticisms of subscribers, whether written or verbal, are investigated individually, and then summarized and compared. Any general feature exciting unfavorable criticism is exhaustively considered to discover whether the fault is laxness in carrying out the system, or weakness in the system itself. This branch of the business forms a subdivision of the traffic department, and employs a number of men who have made a specialty of this work.

In a suburban exchange where the greater number of the telephone stations are in residences there will always be a greater proportion of "don't answer" calls than in an exchange in the business district of Boston. Ordinarily these calls vary from one-half of one per cent to five per cent of the whole number. Only five-tenths of one per cent of the "don't answer" reports are for stations which are out of order; the others are due to subscribers not answering the telephone. Operators are under instructions to ring at intervals of 30 seconds until 90 seconds have elapsed, at which time they report "don't answer." There is some room for judgment in the actual carrying out of this rule. Cut-offs can usually be attributed to either mechanical difficulty with the signals or to disconnecting the wrong connection. By keeping at the telephone the subscriber can materially assist in the reduction of cut-offs and the complaints which follow false rings.

A New Kind of Trouble.

Down in Louisiana there are, as in all other parts of the world, all kinds of people, and as "people" are generally telephone subscribers, it consequently follows that there are all kinds of telephone subscribers—for instance:

A subscriber to one of the exchanges recently called the chief operator, and said:

"Is this 300?"

"Yes, this is 300; is there something you wish?"

"Are the linemen in?"

"One of them is, do you wish to speak to him?"

"Yes, tell 'im to come out here and drive these cows out of my yard."

"The very idea; what has the lineman to do with cows in your yard?" asked the bewildered chief operator.

"Well it says in your directory to report all trouble to 300, and if cows in your yard ain't trouble, I don't know what is."—*The Cumberland Telephone Journal.*

Central Office Locations*

By S. D. Levings

In the manually operated, multi-office exchange of today, there are two separate and distinct switchboards, called the "A" and "B" boards. The function of the "A" board is to connect together any two subscribers lying within the district in which it is situated, and also to connect a line to the "B" board in a distant exchange, which connection is necessary when a subscriber in the district in which the "A" board is situated wishes to talk to a subscriber within the district in which the "B" board is situated. There are two types of "A" and "B" board, known as the "jack per line" and the "jack per station" boards. The characteristics of these two types are as follows. In the "jack per line" type one multiple jack in each section is furnished for each line connected to the board. In the "jack per station" type, one multiple jack in each section is furnished for each station. In the former type, several telephones may be served by the jack of the line to which the telephones are connected. Thus when four party lines are numerous, and the "jack per line" system is used, each multiple jack in a section may serve four telephones, and in this way save considerable space on the switchboard. The reverse condition exists where the "jack per station" scheme is resorted to. From this it is concluded that the main object and feature of the "jack per line" board is the saving of space. Where a board is becoming too small, and it is expected to establish additional exchanges for relief, the "jack per line" scheme is frequently resorted to, thus avoiding installation of additional sections to the present switchboard, until such time as the relief is afforded. The "jack per line" board is fast becoming obsolete, and is rarely used in new installations, and for these reasons will not be considered in the work in hand. The word "multiple" is applied to that type of switchboard in which each line terminating on the board is connected to several jacks installed at frequent intervals throughout the length of the board, in such positions as will allow every operator or every other operator to reach it in making connections. The very small boards, of 500 lines or less, are not multiple boards, but as such boards are not used for multi-office territories, it will be needless to consider them.

The function of the "B" board is to complete connec-

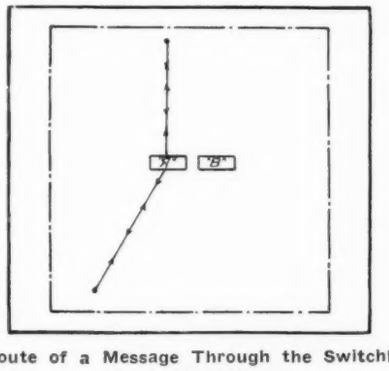


Fig. 20—Route of a Message Through the Switchboard in a Single Office Town.

tions between the "A" board in the district in which the calling subscriber is situated, and the called subscriber's line, which lies in the district in which the "B" board is situated. The "B" board is a multiple jack switchboard, and may be of either the "jack per line" or "jack per station" type. In this work, however, the "jack per station" type will be considered. The route of a message through the switchboard in a single office town, or within an exchange district in a multi-office town, is illustrated diagramatically in Fig. 20. The route of a message through the switchboard for inter-exchange communication is shown

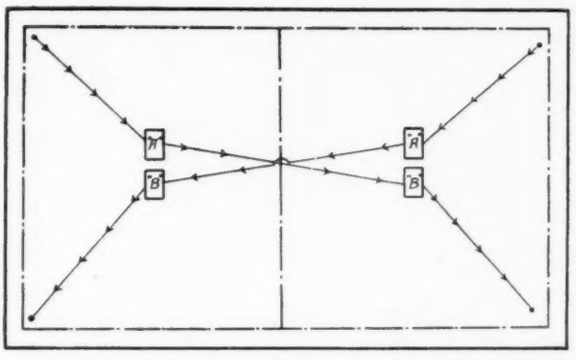


Fig. 21—The Route of a Message Through a Switchboard for Inter-exchange Communication.

in Fig. 21. The two switchboards, and the attendant apparatus, together with the labor charges for operating them, constitute the main items of the apparatus portion of the plant, and coupled with the items of the distributing plant, previously described, constitute the physical basis for annual charge comparisons.

In that portion of the work describing the methods to be followed in determining the economical exchange entrance for conduits and cables, the first cost only was considered. This is allowable in such a case, as the ultimate plant is known and no additions or extensions are contemplated. If the problem of exchange entrance had involved a choice of more than one plan, or if a difference in materials had been proposed, first cost comparisons would not give the true results, upon which to base the selection of the most economical plan. Therefore, where more than one plan is proposed, or where various materials are proposed for one or more plans, the value of the plant so constructed must be known at various intervals in the future, to get the true comparison, and first cost cannot be used to obtain the future values.

Not only in plant construction problems is the first cost replaced by another method of calculating values, but in the business office where prospective earnings, expenses and dividends are figured, the substitute for the first cost is used. As an example, in order to ascertain the earning power of a plant, its true value, which is the amount of cash investment, must be known at any time the earning power is to be calculated. Without further explanation, it is clear that the value of the original plant newly installed is not the same at the end of the first year or any subsequent period as the day it was placed in operation. So, throughout the life of the plant, it becomes necessary to know the value, or amount invested, at regular periods, for convenience taken to be yearly. For this reason, some basis of determining the plant value at any given time must be determined upon. The change in this figure substituted for first cost, by which the plant value is ascertained at any period, is known as the annual charge. The annual charge may be defined as that per cent of the original investment in any material or portion of the plant

*Continued from issue of August 21, 1909.

which represents the yearly depreciation in investment, below the amount of the first cost. Thus, if the first cost of the plant, or any material or portion going to make it up, is known, together with the amount to be deducted yearly from the first cost, it is possible to place a valuation on the plant, to determine the investment at any desired time. To obtain this figure for annually depreciating the value of the plant, or materials used in its construction, several fixed charges must be determined. A fixed charge is one which is annually expended for one purpose or another, throughout the life of the material or plant, regardless of other necessary expenditures. For instance, a municipal tax on the property of the telephone company constitutes a fixed yearly charge, whether the plant is young or old, and is often not dependent on the income derived. The money expended to keep the plant in good working condition is also a fixed charge, regardless of other expenditures necessary for extensions to the plant, etc. Therefore, the annual charge may be considered as constituted of fixed charges.

These fixed charges have been divided into four parts, which are expressed in terms of per cent of the original investment, in the particular material or portion of the plant under consideration. . It must be understood that a fixed charge is not equal for all materials, so an annual charge for each portion of the plant must be calculated, in making comparisons. The four fixed charges which are usually considered to make up the total annual charge for any material or portion of the plant are:

(1) Depreciation; (2) maintenance; (3) interest; (4) taxes.

Taking them up in the order named, they are defined and described as follows:

(1) *Depreciation.* The depreciation figure is that amount of money, expressed in terms of percent of original investment, which is assumed to be lost yearly, out of the original cost, due to the physical deterioration in material. Thus, if a material has a life of ten years, its annual depreciation is a certain per cent of the original cost, ten times which will equal the original cost. The depreciation figure is expressed in the formula

$$\frac{O-R}{L}$$

where O is the original cost, expressed in terms of per cent, R the amount of money that can be obtained from its sale as junk, at the end of its useful life, expressed in terms of percent of original cost, and where L is the assumed life of the material, in years. When speaking of original cost, it is assumed to be the cost of material on the work, plus the labor necessary to install it ready for service, and it is assumed that the labor depreciates with the material, and at the same rate. R, the per cent of the recovery, used in the above formula, is expressed in the formula

$$\frac{V}{O-M}$$

where V is the junk value in dollars at the end of the assumed life of the material, O the original cost, in dollars, and where M is the cost of removing the material at the end of its life, in dollars.

As an example of the application of these formulas, when calculating the depreciation figure, consider the portion of the plant called the drop wire, which extends between the terminal of the aerial cable on the pole on which the terminal is located, and the inside wiring at the subscriber's house. Assuming that the drop is 100 feet long, and that the wire costs $0.0189 per foot on the work, the total cost of the material is $1.89. Assuming that the labor required to place the drop in position for service costs $0.67, the original cost of the drop, which is the cost of material plus labor, is $2.56. It is further assumed that it costs $0.15 to remove the drop at the end of its life, that the junk value is 20 per cent of the original cost, and that the expected life of the drop is 10 years. The first figure to be obtained is the per cent of recovery, and, applying the formula we have

$$\frac{V = .378}{O=2.56—M=.15}$$

which equals 14 per cent, or the recovery value. According to the formula for the depreciation figure we have:

$$\frac{O = 100\%—R = 14\%}{10 \text{ (years)}}$$

which equals 8.6 per cent, or the annual depreciation charge for the drop wire in question. Now if another type of wire had been used, or if the wire had been longer, the items inserted in the formula would have been changed and a different result would have been obtained as a consequence. It is readily seen, therefore, that this portion of the annual charge is a variable one, and must be calculated for each case in which a variation in material, etc., is encountered. It is a fact that the actual rate of depreciation on material is not constant from year to year, increasing with the age of the material, but to simplify calculation it is assumed constant.

2. *Maintenance.* The maintenance portion of the annual charge is the amount expressed in terms of per cent of the original cost of material, which is annually expended to maintain the material portion of the plant in proper working order. As in determining the term of life decided upon for material when calculating the depreciation figure, the maintenance figure is evolved from past records. There is no mathematical formula by which the maintenance figure can be obtained, and, therefore, it cannot be considered as strictly accurate. A slight error is always present in this figure, which is of no great importance, and is therefore neglected, but it should be defined in order that the reader may recognize the true value of the maintenance item. It is logical to assume that as material or any portion of the plant grows older it depreciates physically, and therefore requires a greater expenditure in maintaining it than was required when first installed ready for service. As explained above, it is impracticable, when calculating a fixed charge, to differentiate this expenditure so as to cover every year of its life; therefore the expenditure at the mean life of the material is taken as a basis upon which to derive the maintenance item. It has been found, from past records, that an annual fixed charge of $0.20 is necessary to maintain a drop wire of a certain grade in good condition. Therefore, if the original cost of the drop used in the previous example is $2.56, the percent of maintenance for it would be 8 per cent in round figures.

3. *Interest.* The financial arrangements by which funds are secured to construct the plant determine the interest portion of the annual charge. As each individual method cannot be considered, and as there is but one general and common way in which the financing is accomplished, but one proposition will be considered. The bonding method is the one most commonly used in financing all public service corporations. A bond is a first mortgage on any property by which it is secured. When a bond issue is sold for constructing a telephone plant, the proceeds are mainly used for construction. A bond as a security, or mortgage, earns money for the holder, which is in amount proportionate to

the interest designated in the terms of the bond. The average interest figure will be taken in this example as 5 per cent. Now, the bond system of financing means that for every dollar invested from the proceeds of the bond sale, a certain percent of interest must be paid thereon, which, as stated in this assumed case, is 5 per cent. Therefore, in calculating the total annual charge, some recognition must be made of the interest item, and as the annual charge is based on one dollar, the interest item is set down as 5 per cent. To sum the matter up, it takes on the appearance of a direct charge just as if material or labor had been purchased, and is valid as long as the bonds are outstanding. When all of the bonds on a plant have been redeemed, the interest figure in the total annual charge may be omitted.

4. *Taxes.* The tax portion of the annual charge is that per cent of the original cost of the material or portion of the plant which is expended for taxation purposes. This figure is usually taken to be .5 of one per cent. The tax on the drop in question would be .5 per cent × $2.56, or $0.0128.

As previously shown, the sum of the various items, expressed in terms of per cent, equals the annual charge, and for the drop wire in question is:

1.	Depreciation	8.6%
2.	Maintenance	8.0%
3.	Interest	5.0%
4.	Taxes	0.5%
	Total annual charge	22.1%

Applying the annual charge of 22.1 per cent of the original cost of the drop, or $2.56, the annual charge, in dollars, for comparison, is $.5657. If a second drop is taken, as an example, of a different kind or size of wire, involving a difference in price, a figure for its annual charge would necessarily have to be worked out upon the new basis of cost, the annual charge in dollars obtained ,as just described, and compared with the annual charge for the drop selected for comparison. The lowest annual charge will, of course, determine the material to be used. From the foregoing it is felt that no further explanation is necessary to show the error that would be introduced, in drawing conclusions, if the first cost only were considered.

Figures which may be used for theoretical annual charge comparisons, and which are based upon one set of actual records, are given in the following table:

Item	Life, Years	Rec'vy	Depn.	Mtce.	Int.	Taxes	Total Ann. Chge.
U. G. Conduit.	33.0	0%	3.0%	2.0%	5%	.5%	10.5%
U. G. Cable...	16.5	42%	3.5%	2.0%	5%	.5%	11.0%
Poles, equipd. (Heavily loaded)	8.5	0%	12.0%	8.0%	5%	.5%	25.5%
Aerial Cable..	11.0	34%	6.0%	5.5%	5%	.5%	17.0%
Aerial Strand.	12.5	0%	8.0%	5.0%	5%	.5%	18.5%
Aerial Ter'n'ls	12.5	0%	8.0%	10.0%	5%	.5%	23.5%
Open Wire...	15.0	70%	2.0%	5.0%	5%	.5%	12.5%
Tw. Pr. Wire.	10.0	14%	8.6%	8.0%	5%	.5%	22.1%
Subs. Inst.....	10.0	0%	10.0%	15.0%	5%	.5%	30.5%
P. B. X. Swds.	10.0	0%	10.0%	15.0%	5%	.5%	30.5%
Exch. Swds...	7.0	2%	14.0%	15.0%	5%	.5%	34.5%
Buildings	33.0	0%	3.0%	4.0%	5%	.5%	12.5%
Fixt. Furniture, etc..	4.0%	0%	25.0%	10.0%	5%	.5%	40.5%

(To be Continued.)

A Time Saving Code for Party Line Ringing.

The ringing code provided by E. L. Grauel, manager of the Commercial Union Telephone Company of Troy, N. Y., presents several interesting points. It is so arranged that to ring from one to twenty parties not a signal calls for more than four rings. Furthermore, the arrangement is such that there is a minimum chance of confusion. The accompanying table shows the code of short and long rings, represented respectively by dots and dashes, by means of which any desired party may be called. A card furnished to subscribers carries this code, and is also arranged with a space opposite each numeral, so that the subscriber can write down names of each of the parties on his line and do his own ringing for them instead of calling upon the operator.

Among the special features in connection with this code,

1 . .	6 — . —	11	16 . — — .
2 . —	7 . . —	12 — . . .	17 — . . —
3 — .	8 — — .	13 . . . —	18 . — . —
4 . . .	9 . — —	14 . . — .	19 — . — .
5 . — .	10 — . .	15 . — . .	20 — — . .

Ringing Code for 20 Parties on a Rural Line.

Mr. Grauel calls attention to the following: In the code of 20 rings, 11 possible combinations of four rings have been omitted. Some of these, with three longs, four longs, and combinations where three long rings come together, are objectionable for obvious reasons. Mr. Grauel expresses the opinion that the rural telephone business will eventually be handled on the basis of 10 telephones to the line with non-interfering, ring-through service. He thinks that too high rates for rural service will not only restrict development but fail to satisfy the farmers.

At the bottom of the card bearing the ringing code are printed a few notes as follows:

"First and always: Before ringing on the line, ascertain if it is busy, and if so do as you desire the other fellow to do—hang up the receiver immediately.

"Ring as above to call parties on this line.

"Push button and ring to call central.

"Important. This telephone is under contract with the Commercial Union Telephone Company of Troy, N. Y., and cannot be used free by any one except the actual subscribers to this line or their immediate families.

"The charge to talk with anyone on this line is .... cents and to ....., N. Y., ... cents. You will pay the owner of this telephone.

"You can talk from this telephone out on the long-distance lines. Ask 'Central' for rates or other information.

"Pay the owner of this telephone all charges you incur, as he is held responsible for them.

"See large book for long-distance and other local connections.

"Call 'Central' for correct time and after 11:00 a. m. for U. S. Weather Bureau reports.

"Remember the 'Golden Rule' if you have used the line continuously for five minutes and someone else wants it."

Good Salesmen Use the Telephone!

The *Business Philosopher* recently printed the following:

"Surprisingly little use is made of the telephone by salesmen. Yet the telephone can be made to save time, energy and money. It can be made to do a world of necessary work for the salesman. The proper use of it will aid him greatly in increasing his efficiency.

"The salesman who is a student of his work, and who thinks regularly of everything he does, who sums up every act, every sale, every business building move, will soon come to regard the telephone as one of his greatest helpers and friends.

"The telephone can be used to find if customers some distance from town are in. By the use of this instrument, and with the expenditure of but a few minutes of time and comparatively little energy, a salesman can oftentimes save himself a great deal of useless traveling. By the means of a few moments of conversation with the prospective customer, or one of his helpers, much valuable information can be gleaned.

"If long distance trade can be taken care of by means of

a wire, if the element of gambling is eliminated, every salesman can work more efficiently, can accomplish more in less time at less cost of time and energy. To miss a man after a long walk or a long ride and to be compelled to either ride or walk back without profit is a waste that cannot be made up. Once wasted, time is gone forever.

"It is easy to call up a new house and learn the name of the buyer. Whoever answers the telephone will usually find out when he is in, and what is the best time to see him.

"If for some reason a customer cannot be visited, just telephone and tell him why. This will show that you remember him even when you are unable to go to him for business. It will pay."

This would be a good thing to clip and put up in the sample rooms of the hotels in your town—may increase your booth receipts.

Telephone Used to Bring Relief to Train Stopped by Axle Break.

While the representatives of the Atlanta *Journal* and the New York *Herald* were in North Carolina on a special train, gathering data for the Good Roads Conference in Washington, their journey was interrupted by the breaking of an axle. Although this incident furnishes an example of what is liable to happen to railroads, its value to the telephone possibilities is strongly marked. Within a short time after the break, the railroad officials were in communication with the division headquarters and a special locomotive of the Seaboard Line was sent out with material necessary for repairs. The message was transmitted over the lines of the Home Telephone & Telegraph Company and the representatives of the newspapers were strong in their expressions of appreciation of the prompt service rendered under the special direction of General Manager F. C. Toepleman.

Interesting Directory Advertising Copy.

In the last Philadelphia directory of the Bell Telephone Company of Pennsylvania appear several pages of copy advertising the company's service. One page contains the following "Business houses, wholesale—retail—large—small—require time-savers of many kinds. Telephone service is a real economizer. It saves in time many times its cost. The telephone does the work of many people quietly, quickly and efficiently at a monthly cost of about the weekly wages of an office boy."

Another page gives some consideration to the matter of service and outlines the public's part and the company's part in parallel columns. The respective items are as follows:

THE PUBLIC'S PART.

Answer the Telephone Promptly, thus saving the time of three—the caller, the operator, and the person called. In identifying yourself say, "John Doe & Co.," or "Mr. Doe of John Doe & Co.," rather than "Hello" or "Well"!

In Sending a Message—Speak distinctly and courteously—a number clearly given facilitates prompt connection. When connection is established, say "Mr. Doe wishes to speak to Mr. Roe." The phrases given here for calling and answering are both time saving and courteous.

If on a Party Line—Lift the receiver after the bell stops ringing, otherwise the bells of the other subscribers on the line will ring too.

Refer to the Latest Telephone Directory—Numbers called from memory are frequently transposed. A wrong number delays the caller, annoys the person called and slows the service.

Make Specific Complaints—"The service is bad" is too indefinite. Give complete details so that a correction of the difficulties experienced can be made.

Have Adequate Equipment—Unless there are lines and stations enough to handle incoming and outgoing messages promptly you and your customers are delayed. "Busy" frequently results in loss of business.

THE COMPANY'S PART.

Policy—An appreciation of the public's needs—and an anticipation of them. The sparing of no expense in the adoption of methods and equipment justified by a commensurate return in better service and economies in the operation of the system.

A broad business policy, according to each person courteous and considerate treatment.

Employees—Intelligent, courteous, suitably paid and comfortably quartered employees. A sufficient number of skilled people to care properly for both normal and unusual conditions.

Plant—Modern central office equipment. A storm-proof metallic circuit underground system. A reserve plant to care promptly for new subscribers. Sufficient facilities for prompt local and out-of-town service.

Rates—Fair rates, i. e., those permitting—

The highest standard of plant efficiency.

An efficient operation of the system.

A reasonable return on the capital invested.

The telephone company subscribes to its obligations and is endeavoring to fill them.

The page devoted to advertising telephone service for the home covers five points of telephone utility in the following language:

Economy—Saves carfare and time; reduces the necessity of traveling.

Emergency—Gives protection and aid in case of burglars, fire or sickness.

Comfort—Keeps family and friends always near. Errands and shopping done from home.

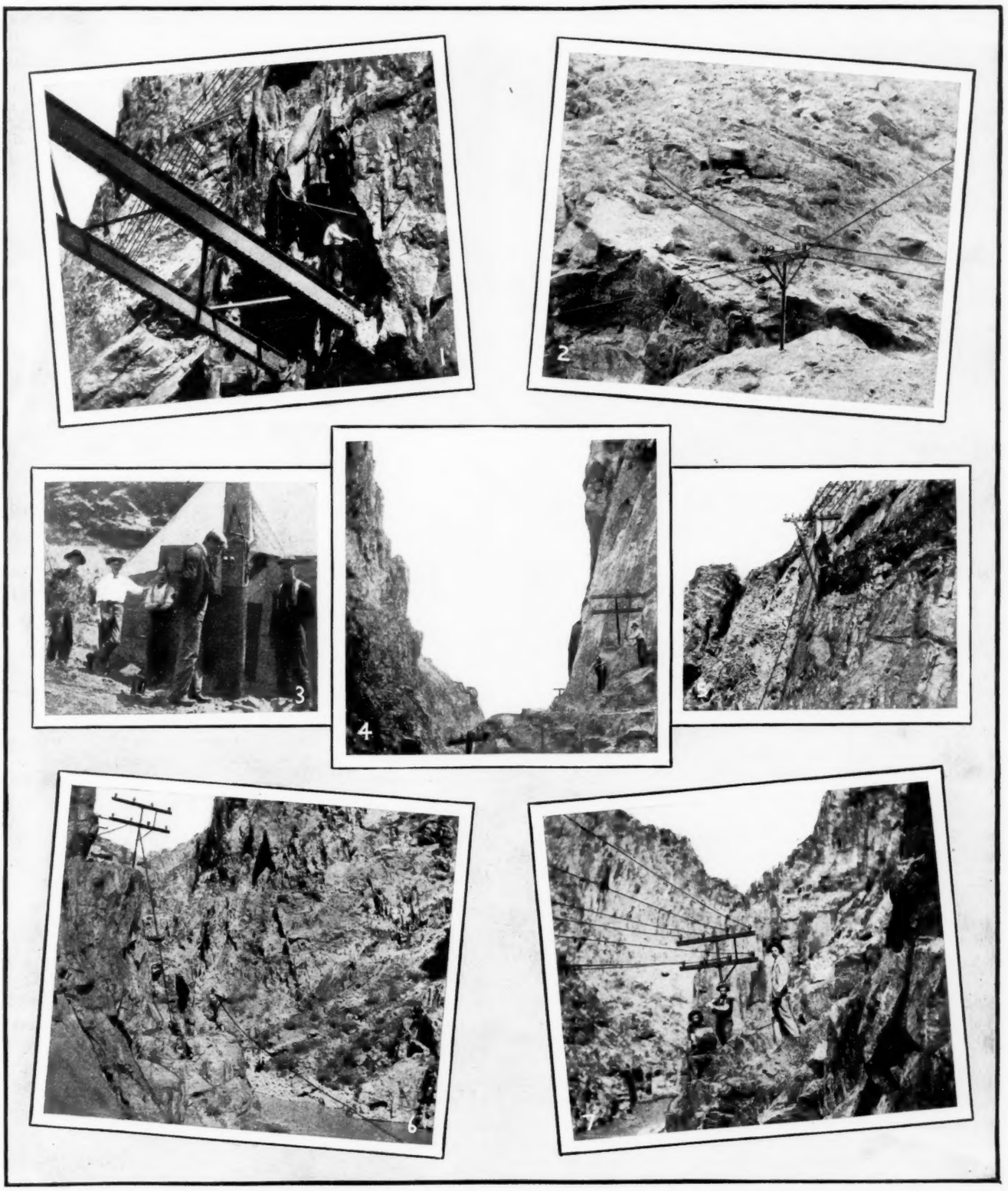
Convenience—Reaches anyone, any time, anywhere; defies weather, distance and time.

Necessity—To a well-regulated home it is a labor-saving and comfort-giving necessity.

Mountain Telephone Construction

The accompanying photographs show portions of the line of the Colorado Telephone Company extending to Canon City, where it passes through the Royal Gorge. This line is eight miles long, and for three miles of its length it follows along the precipitous sides of the towering walls which form the far famed canon known as the Royal Gorge. It will be noticed that it was necessary to adopt two types of construction; one type of supports for the cross arms that stood upright in holes in the rock, while in others it was necessary to set the iron pipe support horizontally in the rock walls of the canon. In some of these latter cases all the work had to be done by men in chairs, which were lowered by ropes attached to some accessible crag. This made drilling the holes laborious, each one taking from one hour and a half to a whole day for one man, depending upon the character of the rock. Sometimes it was possible to

find a rock big enough to support three men, in which case the drilling was done much more quickly. In two cases it was necessary to cross the river, which was done by stringing, first a No. 8 wire from one wall to the other, from which was supported a chair running on a pulley. In some places the line was as much as 250 feet above the river, so the work was one of great mechanical difficulties. The men who performed the work deserve great credit for undertaking and completing a very perilous work in places where a misstep meant a bad fall and probably death.



CONSTRUCTION OF A TELEPHONE LINE IN THE ROYAL GORGE OR THE GRAND CANON OF THE ARKANSAS RIVER IN COLORADO.

(1) Placing a Side Mountain Fixture Over the Famous Hanging Bridge in the Royal Gorge. (2) A Standard Mountain Telephone Fixture on a Cliff About 100 Feet Above the Arkansas River. (3) The Camp of the Colorado Telephone Company's Construction Crew, at the Mouth of the Royal Gorge. (4) A View of the Massive Walls Which Form the Sides of the Famous Royal Gorge. (5) A Perilous Place to String Wires. (6) Stringing Wires Along the Sides of the Royal Gorge—the Lineman Has His Safety Belt Fastened to the Mountain Fixture. (7) Drilling a Hole with Double Jacks on a Rocky Point Above the River.

Explanation of Accounting System for Nebraska Telephone Companies*

Item No. 5. Explanation of Four-Column Journal:

The journal recommended for use in this system of accounting is a four-column book. A sample of a properly ruled book is attached to this circular, marked "Exhibit C." The first column for figures is used for individual debit entries of accounts receivable and accounts payable. The second column is for individual credit entries. These two columns are also to be used for entering the charges against subscribers, which should be divided as between subscribers' rentals and toll charges when making monthly entries. The third column is to be used for the debits of journal entries and the fourth column for the credits of journal entries.

There are two points in handling the journal that must be remembered at all times:

1. Entries of every kind must be made on the journal before any figures are entered on either the individual, distribution or general ledgers. If it is necessary to correct errors that have been made and posted, the proper entry should be made on the journal. Should some account need to be charged with an item which has been charged to another account, the account originally charged must be credited on the journal and the proper account charged. In this event a notation should be made on the journal in such a way that the entry will be understood, should future reference be made to it.

2. Be sure that the journal debit and credit columns (columns 3 and 4) balance before the work is considered finished.

The amount of business done by the operating company will, in a large measure govern the frequency with which the distribution ledger postings should be made from the journal. With small companies the plan of posting from the journal to the distribution ledger once a week will be sufficient; with larger companies it may be more satisfactory to post twice a week, while with other companies it may be found necessary to have the posting done each day. The best plan would be to post often enough to give a reasonable number of figures on the distribution ledger sheet.

The debit and credit columns of the journal should be carried forward from page to page, for the posting period. This must be done in order that when the journal is posted to the distribution ledger, the total debits and credits on the ledger will agree with the total debits and credits on the journal. This will be more fully explained under item No. 6.

Care should be taken to head each page of the journal with the year in which the entries are made. It will be found advantageous to adopt some certain system for writing up the journal from day to day. We would recommend that the cash received stub book be written first, the cash paid out stub book second, the bank check book third, the invoice record book fourth, and then follow with such other entries as are to be made from memoranda. In opening this set of books, remember that the opening trial balance must be entered on the journal, and in closing up the ledger for the year, the closing entries must be entered on the journal. In fact, the instructions mentioned before, i. e.: "Make all entries on the journal at all times," must be followed.

The sample journal page should be studied carefully. It has been written up with imaginary entries for a day's business, as an illustration of the method to be followed. The matter of entering personal accounts in the individual columns of the journal, and then making the proper journal entries in the debit and credit columns, will possibly be a little confusing at first; but if care is taken to show the actual transaction, all confusion will be avoided.

A brief explanation of the entries on the sample journal page may be instructive.

The first twenty-nine entries on the first page constitute a supposed opening trial balance. The only items among these entries that may possibly need explanation are the four accounts payable, James Wilson, James Jackson, John Doe and J. W. Masters. These four accounts are supposed to be parties who owed the operating company on July 1st. As heretofore explained, individual accounts are not to be entered in the debit or credit columns of the journal proper, but are to be listed in the individual columns and their total entered as a charge against accounts receivable. The three entries, J. Martin & Co., J. Elliott & Son, and J. H. Morse & Co., are supposed to be firms that the operating company owes on July 1st, and, as explained above, the individual entries should be placed in the individual columns and the total carried into the credit column of the journal proper, as a credit to accounts payable. We do not believe any explanation of the other opening trial balance entries is necessary.

The next items appearing on page 1 of the sample journal page are supposed to be entries made on the cash received stub book for the day of July 1st. The first four stubs in this book are supposed to be entries made when the four parties who owed the company on the opening of the books, called and paid their accounts. The next stub (No. 5) is an entry which shows that $500.00 has been borrowed from the bank and the cash received for same. Stub No. 6 is supposed to be a sale of dry cells, for which $5.00 was received. Stub No. 7 is supposed to represent the payment by a stockholder (John Miller) of $100.00 for shares of stock which are to be delivered to him. We have not shown on the same journal page the entry where the stock was charged to Mr. Miller, but this entry should be made from the stock certificate book, and would be as follows:

	Debit	Credit
John Miller	$100.00	
To capital stock		$100.00

These seven entries are then added up and the total amount charged to cash.

The debit and credit columns on page 1 have been footed, and carried forward to page 2. This must always be done for the period that is to be posted to the distribution ledger, as explained heretofore.

The first seven entries on page 2 of the sample journal page are supposed to be written up from the cash paid out stub book. The entry on stub No. 1 shows a deposit in the bank of $517.00. Stub No. 2 is supposed to be a payment to a local firm for repairs to trouble wagon. Stub No. 3 is a payment to a toll operator. Stub No. 4 is a payment to a livery firm for boarding the company's team. Stub No. 5 is a payment to J. H. Morse & Co., a local firm, on their account, which is shown in the opening trial balance. Stub No. 6 is a payment for rent of stable for month. The total of these six entries is credited to cash in a lump sum.

The next four entries on page 2 are written up from the bank check stubs. J. Martin & Co. were paid $125.00 by check No. 1. J. Elliott & Son were paid $100.00 on account by check No 2. The two entries are entered in the individual debit column and their total charged to accounts payable, and this amount is credited to the bank.

The next two entries are written up from the cash paid out

*Concluded from issue of August 28, 1909.

stub book. This stub shows that the $500.00 borrowed from the bank was deposited in the bank. This entry was necessary in order to balance the entry on the cash received stub book, showing that $500.00 had been borrowed.

The next nine entries are supposed to be written up from the individual ledger, and show the charges made against subscribers for service. The system recommended for making these entries is to use the two individual columns to make a division between rentals and toll earnings at the time the entries are made, so that the proper credits to these two accounts can be shown. These accounts are footed, and the total charged to accounts receivable.

The next five entries are supposed to be written up from the invoice record book for goods purchased from J. Martin & Co. The face of the invoice shows that goods amounting to $30.00 should be charged to exchange aerial equipment repairs, $10.00 to subscribers' station repairs and $10.00 to toll equipment repairs. A complete explanation of how to make these charges against the proper accounts will be found in circular No. 37. The total of the invoice is credited to Martin & Co. in the individual columns, and this total placed to the credit of accounts payable on the regular journal.

The total footing of the two pages of journal entries is then made, and, as the debit and credit columns agree, it is evident that the journalizing has been correctly done. If they should not agree the work must be gone over, and the error located.

In this connection it might be well to outline some method of handling material purchased, as divided between maintenance of the plant and new construction. Where the operating company does not open a warehouse account, it would be well to charge all material received to the proper account as called for in the general ledger accounts, as explained in circular No. 37. To illustrate this point, let us suppose that a car of poles has been bought of J. Martin & Co. On July 1st the railroad agent presents a bill for $130.00 freight on this car of poles, and a check on the bank is given him for this amount. The invoice from J. Martin & Co., which was received some days prior to this time, shows on its face a charge of $260.00 for these poles laid down at the operating telephone company's station. The entries for this transaction would run as follows, considering the invoice first:

	Debit	Credit
Exchange Aerial Equipment	$260.00	
To accounts payable		$260.00
	Credit	
J. Martin & Co.	$260.00	

As the invoice of J. Martin & Co. calls for the poles to be delivered at the operating company's station the entry of this item on the bank check book stub would be as follows:

	Individual Debit	Journal Debit	Journal Credit
J. Martin & Co.	$130.00		
Accounts Payable		$130.00	
To Nat'l Bank			$130.00

Now, assuming that ten of these poles are to be used to maintain the present plant, and that these ten poles cost $1.00 apiece, the entry would be:

	Debit	Credit
Exchange Aerial Repairs	$10.00	
To Exchange Aerial Equipment		$10.00

Item No. 6. Explanation of Distribution Ledger:

The distribution ledger, a specimen sheet of which is attached to the circular and marked "Exhibit D," has been prepared with two special objects in view:

1. To provide an easy method of distributing journal entries to the proper ledger accounts.

2. To make it possible for the bookkeeper to know that the entries so distributed have been correctly entered.

By reference to this distribution ledger sheet, it will be found that all of the accounts called for in Circular No. 37 have been provided for, both as to general ledger and operation ledger accounts. In order that any account shown in either of these groups of accounts can be debited or credited, the debit and credit sides of the accounts have been provided for.

As mentioned before, this distribution ledger cannot be made to take care of the individual accounts receivable or accounts payable entries. This class of accounts should be taken care of in the manner explained under item No. 5, and which will be more fully explained under items Nos. 7 and 8.

This method of posting journal entries makes it possible for the bookkeeper to run down the debit side of the journal and distribute the accounts as they come, and be able to prove his work before starting to distribute the credits shown on the journal. As stated above, it is desirable to post to the distribution ledger often enough so that the question of adding up the different accounts will not become burdensome to the bookkeeper. It would be well for the new beginners to post the journal frequently for awhile, until they become accustomed to handling the distribution ledger, and thereby be enabled to more easily secure a balance on the work done. Reference to the sample sheet of the distribution ledger will fully explain how it is to be handled.

Item No. 7. Explanation of Individual Subscriber's Ledger:

The individual subscriber's ledger, a specimen page of which is attached to the circular, marked "Exhibit E," has been provided in order that a complete record may be kept of all accounts receivable due the operating company.

This ledger should be opened with all the accounts receivable due the operating company July 1, 1909, as shown on the opening trial balance. This should be done in the column provided to show the balance due for the month of June. Two lines have been prepared for each individual entry on this ledger. The upper line should be used to show the rental earnings and the lower line to show the toll earnings.

The accounts may be placed in this ledger either alphabetically, according to the name of the subscriber, or numerically with regard to the number of the subscriber's telephone. If the telephone number system is adopted the subscriber's account can be located more readily.

In making monthly charges to subscribers it will be found more satisfactory to use the individual ledger as a basis for making the journal entries. The total rental and toll earnings shown on the individual ledger must equal the amount credited to these two accounts on the journal. This has been fully explained on the same journal page.

The balance due from accounts receivable, as shown by the individual subscriber's ledger, plus the individual accounts receivable due the operating company, as shown by the individual accounts in the back part of the general and operation ledger, should equal the amount shown as a balance of the accounts receivable account on the general and operation ledger as carried through the distribution ledger.

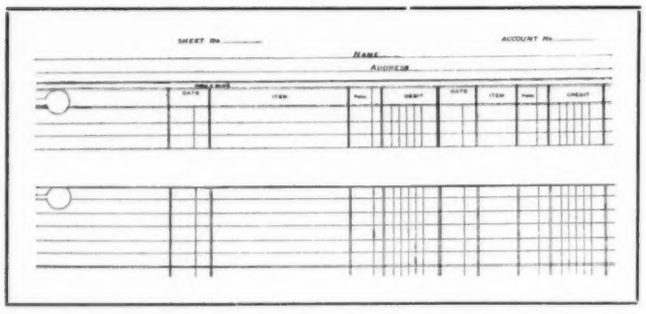
In posting from the journal to the distribution ledger, care should be taken to check off each entry on the journal by placing the distribution ledger sheet number opposite the entry, thus: "S. 1." The pages of the distribution ledger should be numbered consecutively throughout the year. It requires both sides of one sheet of the distribution ledger to constitute one full posting sheet.

After the distribution ledger has been posted and the work proven, the totals of the several accounts should be carried to the general and operation ledger, and the page of that ledger noted in red ink in the headings of the accounts so posted. The page of the distribution ledger sheet should also be shown on the general and operation ledger.

Item No. 8. Explanation of General and Operation Ledger:

The general and operation ledger may be a book of any size the operating company desires to use. The necessary size of this ledger will depend somewhat on the number of

postings per month which are made to the distribution ledger. If the journal is posted once each week, there cannot be more than fifty-two entries to any one account in the general and operation ledger. The sample page attached to the circular, marked "Exhibit F," is taken from a small loose leaf book



A Sample Sheet for the General and Operation Ledger.

that would accommodate a business of ten or twelve thousand dollars per annum.

This book should be large enough to take care of all general and operation accounts called for in Circular No. 37, and also have room for any accounts payable or accounts receivable that are not carried in an invoice book as mentioned under item No. 4, or in the individual subscriber's ledger.

A trial balance can be taken off the general and operation ledger at any time it is found desirable. It would be well to do this once a month so that the posting from the distribution ledger to the general and operation ledger can be proven. A trial balance showing both the debits and credits of all the accounts answers the purpose of proving the work, and saves the trouble of making the deduction of the details and credits of each of the accounts.

It must be understood that in making up a trial balance of the general and operation ledger, neither the individual accounts payable nor accounts receivable, as shown in the individual ledger, nor those in the back part of the general and operation ledger are to be included, but only those accounts that are run through the distribution ledger.

To close up the general and operation ledger at the end of the operating year, the following method may be pursued: Go through all of the general ledger accounts and balance them up in the following manner: Taking the capital account for an illustration, let up suppose that the total credit side of this account is $5,000.00 and there is nothing on the debit side of the account. In red figures on the debit side enter "To Balance $5,000.00." All ledger accounts that are not operating accounts should be closed up in the above manner, not including, of course, any accounts payable or accounts receivable that may, for convenience, be carried in the back part of the general and operation ledger.

Operation accounts are those that have to do with earnings and expenses. These accounts should be closed up in the following manner: Taking the subscriber's rental account for an illustration, let us suppose the total credit side of this account is $2,500.00, and, on account of errors or some other reason, the debit side shows $200.00. This will leave a credit balance of $2,300.00 and an entry should be made on the journal as follows:

	Debit	Credit
Subscribers' service	$2,300.00	
To Profit and Loss		$2,300.00

All of the operation accounts should be treated in the same manner. These journal entries should then be carried to the distribution ledger, and from there to the general and operation ledger, and the accounts red lined, and the footings carried down. The profit and loss accounts should be footed and this account balanced in the same manner as the general ledger accounts. The profit and loss accounts will then show the effect of the year's operations. It may be said, in this connection, that the profit and loss account may also be used to charge off the books any uncollectible accounts during the year, or, should there come to the business some profit that is not credited to any other account, the profit and loss account may be credited.

After all the general and operation accounts have been closed up in the manner above described, a trial balance should be taken off the general and operation ledger. This trial balance will show all the year's operations. If the business has been conducted at a profit, the net income may be distributed in any manner that the board of directors may desire, allowing such amount as they may think proper to the depreciation reserve account, and to the surplus reserve account, distributing the balance, if deemed advisable, as dividends to the stockholders.

These distributions of net income should be made by journal entries in the following manner: Assuming that the business shows $1,000.00 net profit, and that the amount so gained has not been expended in new construction or to reduce indebtedness, the journal entry might be as follows:

	Debit	Credit
Profit and Loss	$1,000.00	
To accounts payable		$ 500.00
Stockholders		
John Wilson	$200.00	
James Smith	200.00	
E. Miller	100.00	
Depreciation reserve		300.00
Surplus reserve		200.00

It must be a fixed policy not to make entries on the general and operation ledger that are not first made on the journal, in order that the books may be in a balanced condition at the commencement of the second year's operations. If this is done much confusion may be avoided.

It is self-evident that if the earnings from the year's operation have been used for new construction, the amounts so expended will show in the general ledger accounts, such as exchange equipment, exchange aerial equipment, subscribers' stations, etc., or, if during the year the notes payable have been reduced, say from $1000.00 to $500.00, these accounts on the general and operation ledger will readily show that fact.

A New Use for Telephones in Apartment Buildings.

The following from one of the New York papers shows how people living in apartment buildings depend on the telephone operator for giving them information:

"We all know that it is one of our privileges to call central for the exact time," said the man, "and most of us have done it. But I have just learned for the first time that telephone operators in some apartment buildings are expected to give a reliable weather report at any hour of the day. It seems that women living in inside or rear apartments, that have practically no outlook and a difficult view of a patch of sky, inquire of the operator before venturing out in their good clothes. They can tell from their windows if the rain is falling and that is about all."

THERE'S A REASON.

When Mrs. A. complains because she cannot hear a word,
Just ask her if she's sticking pins in the receiver cord.
When Mrs. B. complains because the "rings" aren't loud enough,
Just ask her if she's covered up the bell with lots of stuff.
When Mrs. C. complains because her Central is so slow,
Just ask her in and show her 'round; there's lots she doesn't know.
When Mrs. D. complains because she gets the busy test,
Just ask her if she thinks each line awaits just her request.
When Mrs. E. complains because her friends at times can't get her,
Just ask her if she doesn't think a special line is better.
When Mrs. F. complains because she gets the wrong connection
Just ask her if she's sure she gave Central the right direction.
From Mrs. A. to Mrs. Z., each one has some complaint
Which seems at first to be the worst—but usually it ain't.
Just take 'em as they come along,
Each one in its season,
The cause you'll find, if you're not blind:
Most always there's a reason.

The Prevention and Defense of Damage Suits*

By William S. Hart

With telephone companies, as with all institutions of public service, the damage suit is a constant reminder of the tribute exacted by human nature from its soulless brother in iniquity.

The recent adoption of the telephone as an every day universal utility suggests one explanation of any comparative immunity heretofore enjoyed. Perhaps, too, its possibilities for the enterprise of the ambulance chaser have not been yet developed, but that is sure to come in time.

With every highway of the land, from the busiest thoroughfare of the noisy city to the most picturesque and unfrequented country lane, and the most impassable mountain trail, carrying telephone lines of various models and construction, claims for injuries occasioned by interference with poles, wires, and other fixtures must be reckoned upon as a constant, and perhaps to some extent, an unavoidable burden incident to the maintenance of the property and the conduct of the business. Underground construction minimizes this loss, and may in time eliminate it in the city, and the small towns even; but upon rural highways and for village and country town exchanges, no one of our generation looks for other than aerial construction.

This means poles in highways and at street crossings; anchors sustaining the strain of diagonal wires, transmission wires that swing from pole to pole just at the edge of the traveled way, and sag a little lower with each superimposement of sleet and wind, and wires that cross the road endowed with the perverse fatality of being the ones that always sag just low enough to contract unholy attachments with the bows (beaux) of buggy tops; cross arms with the knack of rotting out at the auger hole except just at the surface; and insulators so tempting to the marksmanship of the ——— (blessed) little man, the

"Barefoot boy with cheek of tan"

(when at large with his 22 bore rifle so suggestive of the necessity of "tan" upon another portion of his anatomy.)

And those are the things that breed accidents and propagate most damage suits.

Mr. William S. Hart.

If you gentlemen of this International Association, the product of whose labors and the results of whose experience during the past fifteen years, has brought the music of the telephone bell to the humblest and most isolated home, and have enwoven this continent beneath the warp and woof of your wires of enlightenment and happy destiny, will not take amiss the suggestion of one without technical or practical knowledge of your business, and whose only experience has been that of the court room defending damage suits, I would most earnestly urge greater vigilance and more liberal expenditures in what I may term the engineering department of your construction work, such as selection of routes, location of lines, placing of poles and wires, and most especially those additional fixtures required in line construction. You might fasten a guy wire to a star, and attach a brace high up upon a sunbeam, and still look for a strong case against you because of their negligent construction and improper location. If asked for my suggestion of some needed and wise economy, I would offer as such the doubling and trebling even, of the expenditure for this preliminary work. Commercial lines occupying highways between cities are, comparatively speaking, institutions of permanence, and, when properly constructed, may be expected to continue in substantially the same condition for more than a score of years, during which every change of highway conditions and mode of travel must be anticipated, and every stress of weather and wind and ice and storms must be withstood, and every eccentricity of both man and beast while on that highway must be encountered; and with all these things in mind, the lines must be constructed so as to reduce the possibility of accidents, from any cause, to the minimum; because if there are no accidents, then there will be no problems as to where the responsibility therefor should rest.

I am stating it only just a little too strong when I say that before locating each pole, you should get thoroughly drunk (of course in imagination only) and with all the glorious recklessness of bold Tam O'Shanter, undertake to drive into that pole going both ways upon the highway in that condition. You should picture drunken men, and sober men, and cooing lovers, astray upon the loneliness of that highway at the most unseemly hour of the blackest night, and calculate the chances pro and con of escape of that pole from collision with runaways and roadway races, and also picture the encounter of an unbroken colt in the hands of a timid driver, and a speeding automobile under the direction of a reckless chauffeur.

Even in far off, bleeding Kansas, where the flavor of good liquor no longer exists, except as a cherished and melancholy memory, account should be taken of that species of intoxication traceable only to the bracing atmosphere and the rustle of her boundless corn fields telling in limpid whispers its possibilities of stimulation when transported beyond the borders of that prohibition commonwealth to hospitable Illinois or chivalrous Kentucky. There is a universal affinity between an intoxicated traveler and a telephone pole, and an injury resulting from a collision is always complicated with an hallucination of perfect sobriety at the time.

In stringing a wire across the highway, it should always be done upon the theory that it is the destiny of that wire to find its way down into the highway, and that the problem of construction is to find some way of defeating that destiny.

The nature of your responsibility and the legal test of your liability for accidents is slightly different from that of almost all other public service institutions from the fact that your property is in the highway, the primary use of which belongs exclusively to the public; and your rights are always subservient to the right of the public to the use of all of the highway necessary for its purposes.

Some states, like Iowa, for instance, authorize the use of their highways without requiring any special permit either from local authorities or abutting owners. Others donate the rights of the traveling public only, and require a satisfactory adjustment with the adjacent land owners for the additional burden imposed on their property, and others impose various different conditions, the review of which would be

*A paper presented at the Annual Convention of the International Independent Telephone Association, December 1, 1908.

profitless in this paper. Whatever the local requirements may be, state, county or municipal, no telephone line should be constructed without a full, exact and careful compliance with them, because when confronted with a claim for damages, if it should appear that you are a trespasser upon the highway, when it is established that your property was in any way connected with the cause of the injury, you are practically without defense.

I think in all states your rights upon the highway are conditioned or limited by a provision that you shall not maintain any fixtures so as to interfere with the rights of the public in the way of the road, but the judicial construction of highway rights and the accompanying prohibition against interference with travel has been of a liberal and common sense character. The unanimous declaration of all courts is that the highway privilege is a substantial one, and that a limitation thereof with regard to non-interference with the rights of the public must not be construed so as to be hostile and contrary thereto; but the two must go together to the general effect that the highway right is subservient to that of the public; but the public must not insist upon the exclusive use of more than is necessary for the purposes of travel, and cannot interfere or prevent your occupancy so long as no inconvenience is occasioned in the use of the road for the purpose for which it is intended.

Assuming that you are in the public highway, with all of the rights thereto which are conferred by law, the question then presents itself as to the test of your responsibility for accidents occasioned by your poles, wire or other fixtures therein. One rule can be announced with the certainty arising from the unanimous declaration of every court which has dealt with the question. Telephone owners are not absolute insurers against accidents occasioned by contact with their property. In other words, the mere fact that your fixtures are in the highway and have occasioned the injury, does not of itself establish a liability. Your liability depends upon whether or not you have been negligent in the construction and maintenance of your lines. To illustrate: You are not responsible for his injury to a traveler who drives into one of your poles, properly placed, out of the beaten track, even though because of darkness or other like cause he might not know or could not have known that he was out of the traveled way. You are not liable to one who encounters and is injured by one of your wires unless there was negligence in the original placing of the wire, or unless you permit it to become a dangerous interference with the highway.

Though making use of public property, you do not assume all responsibility for accidents arising from such use; and, in the absence of negligence and wrong doing upon your part, you are not a guarantor of the safety of the traveler thereon. Injuries from contact with one of your wires does not alone constitute a cause of action against you. The injured party must allege and prove some additional facts constituting negligence, and upon his total failure to make such proof the court will protect you by directing a verdict; but if there is evidence tending to establish facts which might, in the judgment of a reasonable man, constitute negligence, then it becomes a question for a jury to determine both as to the fact of negligence and amount of damage, should they find against you on the question of negligence.

The lawyers of this audience will coincide with me in defining your liability for highway accidents to be substantially the same as that of municipalities with reference to sidewalks and bridges.

Lines, in the first instance, must be constructed of first-class material, of proper style and pattern, and adapted to the use to which they are put. Construction work must be skillfully done throughout. Poles, braces, guy wires or other fixtures must not be located where there is a probability that they will interfere with the usual, ordinary and proper use of the highway for the purposes of travel.

Where injury is sustained because of improper or careless original construction, it is immaterial how long the condition existed or whether the officials in charge had knowledge thereof, or whether the likelihood of the accident could have been foreseen; the owner is liable because of his obligation to use good material, good workmanship and prudent location of poles and fixtures, keeping in mind the superior right of the public to the exclusive use of all the highway which it requires for the purposes of travel.

If a line is built wrongly, or of poor and improper material, or poles and other fixtures so located that there is danger of injury to those making ordinary and prudent use of the highway, the owner is bound to know the defects of construction, and cannot escape liability for his own negligence.

A different question is presented where an injury is alleged to have been caused by something occurring subsequent to the installation of the line and not due to faulty original construction. After a line is once built the obligation of its owner is to use reasonable care and diligence to keep it in a safe condition and a proper state of repair, and he is required to make such inspections and investigations as may be necessary under all of the circumstances, having in mind the condition, age and uses of the property, the character of travel upon the highway, and any exceptional strain or risk to which the property may be subjected by reason of unprecedented storms or any other unusual conditions; and therein lies the questions of uncertainty, upon which little information is yet to be obtained from the declarations of appellate courts.

Just what is required of telephone owners in the way of inspection and specific tests to determine whether the maintenance of the property is characterized by negligence or prudence, and the rules and methods by which the court should proceed to determine same, are matters the importance of which cannot be overestimated. And to the end that this Association may be awake to its importance and unite in some intelligent effort to assist the courts in determining such matters upon a true and sound basis, is the primary purpose of this paper.

A line of railway costing thousands of dollars per mile for its original construction, over which are daily transported hundreds of lives and property of untold value in heavy trains, propelled at high speed, by powerful engines, and earning for its owners large sums of money, and upon which there is constant danger of accident with disasterous and tragic results, must be kept under constant supervision, and failure to do so for a single day, even, could not well be characterized as other than negligence of the grossest kind; but manifestly such vigilance should not be demanded upon telephone transmission lines extending along rural highways between towns, miles apart, occupying only that portion of the road entirely outside of the traveled track and safely carried ten to twenty feet above the heads of all travelers. In some instances, at least, daily inspection of such lines would occasion a greater expense than the earnings of the inspected property, and might continue for months and even years without the discovery of anything demonstrating the necessity therefor. It is safe to say that, in theory, at least, such a requirement will never be imposed as a condition for successful resistance to claims for damages. However, where original construction is insufficient or because of age is has become dilapidated or rotten, or, from lack of inspection and failure to make necessary repairs, the owner has reason to believe that poles are liable to break or wires come down, a court must not be expected to hold the owner harmless upon a plea that the dangerous condition was recent and no knowledge thereof had been conveyed to him.

Though daily inspection may not be required, daily and

hourly vigilance is demanded in making use of every reasonable and convenient means of ascertaining the condition of the lines and their freedom from liability to cause injury. For example: If in ringing between two towns it is apparent that there is some interference, or a grounded wire, that is sufficient notice that a wire may be down in the highway or that some other condition may exist somewhere on the line constituting a danger to the traveling public, and unless prompt steps are taken to ascertain the cause and restore the line to a condition of safety, the owner must expect, in case of accident, to be held responsible for the full amount of damage, with the usual generosity of measure accorded to all corporations when being dealt with in matters of that nature.

There is no liability for fallen or broken poles or wires (always assuming that the original construction and general maintenance is reasonably sufficient) unless those in charge have actual knowledge of the dangerous condition, or unless it is permitted to exist so long that, in the exercise of ordinary diligence and prudence, they should have had such knowledge. The actual time a pole may exist as an impediment or danger to travel without its owner being held to have knowledge thereof, depends upon various circumstances. Inspection of a line recently constructed of the best material is not required to be so frequent as that of a line of original inferior construction and showing signs of age and decay. So far as I know, no court has yet specified as a matter of law the number of days or hours which may elapse after a wire is down in the highway before its owner would be charged with responsibility therefor, in the absence of actual notice.

In the state of Alabama the Supreme Court declared that the owner of a wire on a rural line carried upon insufficient and rotten cross-arms, was liable for an injury suffered, upon a showing that the wire remained down in the highway for a period of two days. This decision, however, was not a test upon the question of time, because the mere fact of the maintenance of the line upon rotten cross-arms would of itself constitute negligence, without reference to the length of time the actual obstruction existed.

In the state of New York, a storm-blown tree broke a wire down into the highway, and next morning the road supervisor fastened it out of the highway to another tree, where it remained four days, and in some manner became unfastened and injured a party traveling on the road. Communication over the wire was not interrupted, and it was held upon appeal that there was no liability upon the telephone company, because it could not anticipate the blowing down of the tree, and the period of four days was too short in which to hold the company bound to know that its wire was down.

It was my misfortune during the present year, in a case before the Supreme Court of my own state, to be the recipient of the most staggering decision and most unfriendly pronouncement upon this question which has thus far emanated from any English or American appellate court, and you will pardon a hurried reference to the facts. On July 5, some poles that had blown down the preceding night during a storm, were reset and the line put back in first class condition. Twice during the ensuing month the employee in charge of the lines for that county had traveled over this line, the last being July 27. About August 5, ten days after this last inspection, an insulator pin, in some unknown manner, broke and let the wire down into the highway, where a passing team became entangled in it, and a neighboring farmer with a hay bale wire tied it securely back to the pole, out of harm's way, where it remained five days longer and then in some unaccountable manner became disengaged and hung wheel high, about three feet to one side of the traveled track. With the wire in that condition, the plaintiff passed down the road about mid-afternoon, with nothing to divert his attention, but did not notice the loosened wire. Returning about dusk, driving rapidly to escape an impending storm, he drove entirely out of the traveled track and encountered the wire and sustained injuries. Myself and associate counsel contended in the trial court that there could be no recovery for two reasons: First, because plaintiff, having traveled by the wire a few hours before, should have seen it, and was bound to have it in mind on his return, and to have avoided it instead of leaving the traveled way and driving into it; and, second, (and principally) that the fact that the line at that locality had been rebuilt and put in first class shape on July 5 and inspected twice thereafter and tested out for "grounds" and "interference" by ringing through each morning from a central station, in compliance with a rule of the company, was an affirmative and conclusive showing of diligence; and that it was unreasonable as a matter of law to assert that our client should have ascertained within five days that this insulator pin was broken and the wire off the cross-arm, when there had been an inspection fifteen days before, and the testing out each morning showed nothing wrong, because of the voluntary and well meant action of the farmer in tying it up to the pole. The trial court sustained us in this last position, and directed the jury to return a verdict in our favor; but upon appeal the action of the lower court was reversed, the Supreme Court saying that while there could be no recovery in the absence of proof of negligence, the fact that the wire had remained down in the highway for a period of five days presented a question for the jury to determine, as to whether or not there was negligence. In other words, the Supreme Court declared that instead of the uncontradicted facts establishing freedom from negligence upon our part, as a matter of law, it was for the jury to say whether or not, as a matter of fact, there should have been such additional or more frequent inspection as would have brought knowledge to the telephone company that the wire was off the cross-arm and liable to inflict injuries; and should there be a retrial of the case upon the same evidence, the holding of the Supreme Court will require the submission of that question to the judgment of a jury. In a petition for re-hearing, we vigorously protested against the rule announced, and insisted that it was tantamount to saying that, to free himself from the imputation of negligence, the owner of a telephone line is compelled to make daily inspection thereof; and that the court could as well announce the doctrine that in constructing the line, our client became the absolute insurer of the safety of every traveler upon the highway from contact therewith; but our protests were unavailing and the decision as originally announced is the settled law of our state, under the same or similar facts, and also becomes a precedent of high authority in the courts of other jurisdictions.

Now it is my theory that there could be no higher authority upon what is fairly and reasonably necessary in the way of inspections, working tests, and repairs than a united, authoritative declaration and definition thereof, emanating from some body broadly and thoroughly representative of the telephone interests and of the men whose skill and enterprise are devoted to the business and the millions of capital invested and hazarded therein.

(To be Concluded.)

Want of Notice of Fallen Wire a Successful Defense.

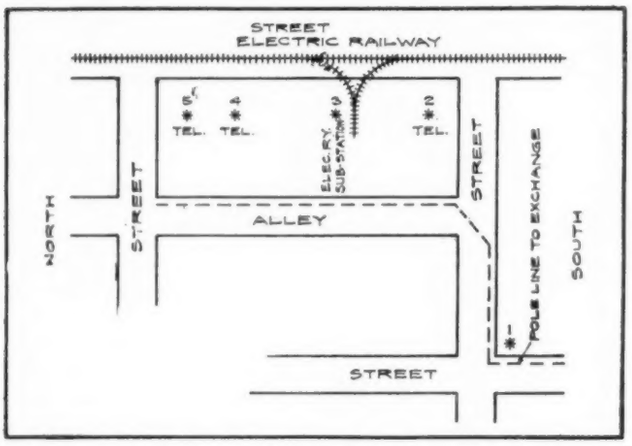
The suit brought by Smith Wiseman against the Wilmot Telephone Company of Leesburg, Ind., for damages sustained by his being caught by a slack wire which was down, near North Webster, has been decided for the defendant company.

Shortly after the wire came down, Wiseman drove into it with his horse and buggy and a runaway resulted, Wiseman being thrown out and injured. The telephone company was able to show that it had no notice of the wire being down and consequently was held not liable for the injury.

Experiences of the Readers

Electric Railway Leakage Throws Drop.

We have had some trouble here which is so far out of the ordinary that I thought it might be of some interest to some readers. The sketch shows an electric railway substation, 3, with the streets and surroundings. At 3 is the substation, with the railway and high tension wires run-



Location of Electric Railway, Substation, and Telephones.

ning into it from the north. At points 2, 4 and 5 are telephone subscribers' stations. The telephones were magneto instruments on grounded lines, each telephone grounded on a ⅜-inch by 6-foot rod.

The telephone exchange is south of the substation, with no high tension wires going south of the power station.

The lines worked in this position for a year or more, and then we suddenly noticed that the switchboard drops would stay down on the lines 2 and 4, connected to two telephones at point 2 in the sketch; the telephone at 5 worked all right. The telephone at 3 was grounded at 1 and was all right. The drops stayed down on the telephone lines from 2 and 4, but the lines were perfectly clear of everything. The drops stayed down most of the time, but not all the time; they were down all of every night.

By placing the telephone at 2 and 4 on a common return ground with the one from 3 and grounding them at point 1, we stopped the trouble and there has been no more trouble of this kind.

Points 1 and 2 are about 100 yards, apart; 2 is about 60 yards from 3; 4 is about 80 yards from 3; and 5 is about 100 yards from 3.

There were telephones east and west of the station, which were closer to it than those north and south.

Sullivan, Ind. W. E. Drysdale.

A Simple Method of Locating Cable Trouble.

The method described in this article is not new, but the writer obtained such good results from it that he is prompted to bring it to the attention of the readers of TELEPHONY, trusting that someone may not have heard of it, and that in the absence of a cableman or of apparatus for making resistance measurements he may be able to locate and repair a bad case of trouble. The scheme is as follows:

Suppose that the cable is wet, caused by a lightning puncture, crystallized sheath, or bullet hole and that the cable has absorbed enough water to cause bad cross-talk and weak transmission. Of course, the conductors of the cable will be grounded to the sheath, the amount of the ground depending upon the amount of water the cable has absorbed. Now if a battery of say 150 to 180 volts be connected to say six or eight of the wet pairs, and the other side grounded on the cable sheath in the office, current will flow out over the pairs until it reaches the point where they are grounded on the sheath, when it will pass through the moisture to the sheath and back to the office. The resistance of this moisture ground being rather high, a heating effect will take place, and by feeling along the cable sheath until a warm spot is felt, the trouble can be located at that point. The writer will now cite two instances when this method was employed.

A cable about 3,000 feet long was found to be wet, showing a reading on the voltmeter of about 30 volts out of 50, gradually sinking back to about 15 volts as the voltmeter current dried it out. A battery composed of 100 dry cells, ordinarily used for running a Warner pole changer, was connected as above, and after examining several suspicious looking places the warm spot was located at a point where the cable ran through some trees. On examination the cable sheath was found to be badly crystallized, caused by the wind swaying the trees and they in turn swaying the cable. This trouble would not have been noticeable on an ordinary inspection, and was located only by aid of the sheath being warmed up. This trouble was located in about half an hour, and it would have taken about that much time to connect up a Wheatstone Bridge for a resistance measurement.

The second case was almost identical, except that the crystallization was in the center of a span, with no apparent cause for it unless it was the vibration of a large transformer on the pole to which the cable was attached. This case was located in about the same length of time.

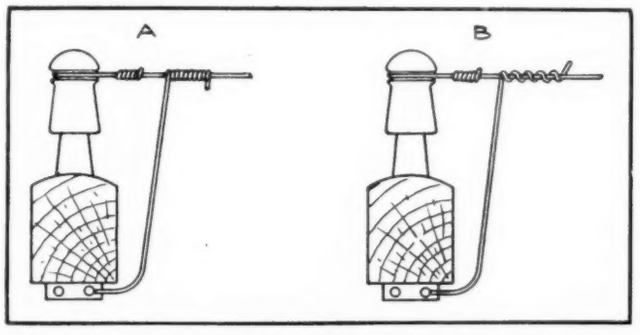
Of course the conditions might be such that this method would not work out. For instance, the sun might have the sheath so warm that the difference in temperature could not be detected, or the moisture might not be great enough to permit a sufficient current to pass to produce the heating effect. However, it worked admirably in the above cases and is given for what it may be worth.

Sidney, Ohio. Wm. R. L. Dwyer.

Open Circuit Caused by Wrapping Wire Too Closely.

The following case of trouble proved interesting to me and may prove so to others:

The test showed that one side of the circuit was open



A Poor and a Good Method of Twisting Wire Before Soldering.

(this trouble was in a straight metallic circuit on a magneto system).

The first test was made at the office end of the cable, which showed the line O. K. to the board, so I then went out to the cable pole and tested in O. K. I then tested my bridle wires, only to find them O. K. and apparently well soldered to the line wires. Next I began to cover my

line, driving about a mile and a half, where I stopped to test, and found the line open between this place and the office. I then recovered the line, testing every joint I came to. This series of tests lead me back to the cable pole, where I located my trouble.

The joint which I supposed was well soldered proved to be the site of my trouble. The bridle wire was wrapped in close turns around the line wire, as shown in Fig. *A* in the illustration, and the solder had flown over the outside and not down to the line wire, thus leaving the soldering part to corrode the joint and cause the open joint.

Had this bridle wire been wrapped in a helix, as shown in Fig. *B*, such a case of trouble would never have happened, providing the wires were properly prepared and cleaned for soldering.

Kendallville, Ind. O. A. Hurley.

An Odd Trouble.

For a long time I was bothered with a telephone on a rural line which would 'talk" when the receiver was on the hook. People in the room where the telephone was located could at all times hear all the conversations going on over the lines while the receiver was on the hook, yet my troubleman reported that the wiring was O. K. After this report I made a personal inspection of the instrument in an endeavor to locate the trouble. The telephone was of the grounded line, push button type. I made an inspection of the wiring and found it O. K. as my troubleman had reported, but upon close examination found that the terminals of one of the batteries touched the spring of the push button, and on separating them I found my trouble cleared. In order to make sure that I had located the real trouble I placed them together and the trouble was again noticed, but on removing them the trouble was cleared. After doing this several times with the same result I was sure that I had found and remedied the trouble.

Clearwater, Kans. John Poehner,
Clearwater Telephone Co.

Poor Ground on Common Return Causes False Rings.

The following is a case of trouble that may be interesting to readers of TELEPHONY:

In the diagram subscriber *A* is on a common return line while subscriber *B* farther out on the lead is on a local ground.

The common return is grounded at cable box No. 2, while subscriber *A* is carried by this box to cable box No. 1 in the same cable. Subscriber *B* enters in cable box No. 2. Both lines are metallic through the cable to the end, where they take the common return, which is in turn grounded at the cable boxes.

When subscriber *B* rang for "Central" both drops would

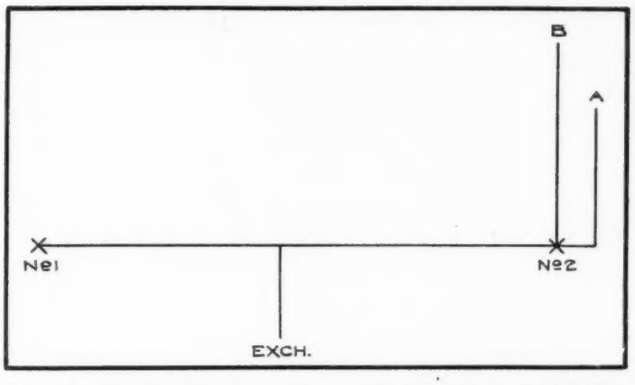


Diagram Illustrating How a Poor Ground on Common Return Caused False Rings.

fall, and when ringing out for subscriber *B* the *A* drop would fall. On testing the cable pairs both were found to be perfectly clear from ground.

After much testing the trouble was found to be due to a faulty grounding of the common return at box No. 2.

Subscriber *A* having a very low resistance bell, ringing current from subscriber *B* would back up through the good ground at box No. 1 and through the drop, line and instrument at *A* to the return side of subscriber *B*'s line.

The ringing out effect can be similarly traced.

Iowa. A Reader.

Covering Storage Batteries.

In placing the glass covers on top of storage battery cells to prevent excessive evaporation it is necessary to be careful that the low side of the cover does not extend over the edge of the cell. During a charge the vapor or drops of electrolyte run to the low side and will keep the cabinet or battery room continually damp, producing a risk of short circuiting cells if the cover extends over the edge.

Palestine, Texas. E. E. Ferrin

Legal Matters and Decisions

By A. H. McMillan

Contribution Between Telephone and Electric Light Companies.

Will you please give us what information you have at hand, or cite any case that appears to bear on the following case: Some time ago, in one of our exchanges, a man driving along the street in a buggy became entangled in a wire that had broken and fallen across the street either some time that day or the day before. The party stopped, and removed the wire and another party coming along the sidewalk, wishing to accommodate the man in the buggy, walked to the middle of the street, and got the wire with a view of getting it out of the way of travel. He walked back to the curb and in attempting to fasten the wire to an electric light pole, which was a suspension pole for an arc light, he came in contact with a steel chain that was used for raising and lowering the lamp. This chain was charged and the party was instantly killed. A number of parties saw the wire in the street that day, and some assert that it was down the day before, but the company's manager disclaims any knowledge of the fact, and even asserts that he was on that street the day before the accident and that the wire was not down. A number of parties claim that they had been shocked on this chain and had notified the electric light people that it was dangerous. This fact can be easily proven. What do you think of our liability?

There is another feature in the case which we would like you to pass on, and that is as follows: The suit will in all probability be brought against the two companies combined. If judgment should be rendered against both concerns, we being a foreign concern and the electric light company being a local one, the chances of collecting the judgment are more favorable from our standpoint, we, in all probability, would be held for the whole amount. Have we any recourse, and could we by any process dissolve the joint proceedings?

It is the opinion of the Legal Editor that neither company is liable, because the person injured was guilty of contributory negligence in deliberately handling a fallen wire. Prudence requires that he leave the wire alone, and summon employes of the company that owned it to get it out of the way. In principle, the case is like that in which a wire, broken by the fall of a limb of a tree, had been wrapped over the end of a picket fence, and a passerby,

wondering whether the wire was still charged with electricity, pointed his index finger towards the wire, thereby receiving a shock which killed him. Carroll vs. Grande Ronde Electric Co., 84 Pacific, 389.

The person injured deliberately put himself in a place of danger just as the party did who was held guilty of contributory negligence by experimenting with a telephone box known to be out of order. Citizens' Tel. Co. vs. Westcott, 99 S. W., 1153. See, also: Brown vs. Consolidated Light, Power & Ice Co., 108 S. W., 1033; Parsons vs. Charlestown Consolidated Railway Co. (S. C.), 48 S. E., 284.

If a judgment should be rendered against both companies and collected from your company, you would be entitled to sue the electric light company for a contribution of one-half of what you paid. This is a well known legal doctrine which can be easily established. There is no process by which you could dissolve the joint proceedings.

Telephone Lineman and Electric Light Wire.

My brother, a lineman for a local telephone company, went to a neighboring town to do repair work. The electric light plant is owned by the city. Ordinarily there is no day current.

Between 11 and 12 o'clock in the morning my brother, while drawing a telephone wire over an electric wire was knocked from the pole. A young man walking near witnessed both the fall and the burning of the wires caused by the contact. As a result of the fall my brother has a severely burned and broken arm.

Will it be possible to secure damages from the city, and to what extent?

Your brother is entitled to damages from the city. In turning on its current at an unexpected time, the city was negligent. When a city engages in a private enterprise, as the conducting of an electric light plant, it is liable in the same way as an individual.

Pomona Case Decided by Court of Appeals.

United States Circuit Court of Appeals has decided the case of the Sunset Telephone and Telegraph Co. vs. The City of Pomona in favor of the company, thus reversing the decision of the United States Circuit Court. It is said that the case will be carried to the Supreme Court of the United States.

The court holds that the telephone company has the right to maintain its telephone poles and wires in the streets of Pomona without obtaining from the city, a franchise.

The reasoning of the Court is as follows: A telephone company being an interstate business is one system, and all its lines are agencies in the transaction of interstate commerce, just as each rail and tie of an interstate railroad constitutes an integral part of the system, and no distinction arises because its poles and wires are used also for intrastate business. The plaintiff company is such a concern and is expected from the statutes of California, requiring certain corporations to acquire franchises from municipalities. Section 536 of the Civil Code of California applies to telephone corporations, and when any such a corporation erects its lines under this section and maintains and operates the same, a contract is thereby created between it and the state which may not be impaired by any subsequent legislation; nor can it be compelled to apply for municipal franchises, but is subject to all reasonable police regulations. See Fed. or C. C. A. Reporters.

What Constitutes Going Out of Business?

An interesting case arising out of a peculiar telephone contract has been decided in the city court at Elmira, N. Y., in favor of the York State Telephone Company. The suit was brought by the company against Lyman Coolbaugh, who was sued for the rental price of a telephone. The defense was that the contract read that, in case of a subscriber going out of business, dying or removing from the city, he was to be relieved of liability. Mr. Coolbaugh had the telephone placed in his residence and claimed that he used it for business purposes. He retired from business and contended that he could not be held under the terms of the contract. The telephone company, on the other hand, took the position that as the telephone was placed in Coolbaugh's house and not in a business building, he could not be excused from paying the contract price on the ground that he had retired from business.

Objects to Connecting with Three-Throw Switchboard.

Marysville, Mo., has three telephone systems, one for every 2,000 population. Dr. F. H. Martin has two of the systems connected with his house and has filed a mandamus suit against the other telephone company to compel it to connect with his residence. The telephone company objects to having Dr. Martin for a subscriber for the reason that when his home was built a three-throw switchboard was built in the wall. The switch connected any of the three systems over which he desired to talk. The telephone company wants Dr. Martin to have a separate instrument attached to its wire, and Dr. Martin refuses to have the interior of his home torn up to take out the three-throw switch and put in three separate instruments.

Answers to Practical Questions

Cross-Talk on Grounded Toll Line.

I have a toll line twelve miles long parallel with a party farmers' line seven miles. If I make toll line metallic, will the cross-talk be as bad from party to toll line as before? Is there any way to eliminate it without making both metallic?

If you make the toll line metallic and have it properly insulated and transposed, you will have no cross-talk between them.

However, if you connect the toll line through the switchboard to a grounded line, which can pick up cross-talk from the seven-mile farmers' line, you will get cross-talk.

Testing for Ground on a Toll Line.

I have a telephone toll line that tests grounded with my pole changer current and a set of 120 ohm bells. I cut in a test station one mile out on both sides of the line. A test for grounds in this mile rings the bell so faintly as hardly to be heard at all. Both wires ring the same. The drop winding is cut out. I can find nothing on the line by inspection. I tried a magneto testing apparatus (made by myself after blue prints purchased) without success. The same tester works O. K. on a low resistance ground. It consists of pulsating current from 5 to 50 dry cells grounded on one side and connected to the line wires. The current flows along the wires to the ground on the line to complete the circuit. An electromagnet is cut into series with a receiver and used in an exploring coil in the field of force of the wire. When you go past the ground on the line there is no field to be heard in the receiver. In this mile of line I tried this test but could hear nothing through my coil. I then tried an induction coil as a transformer. I found that by running pulsating current through the secondary and connecting the other to the line wires, that I could get a good loud tone out of my coil and receiver at the office. I used from one to five dry cells. I went out to the last span on the mile and heard the tone very faintly. Six inches from the end of the wire at the test station, I could hear nothing until I grounded the line, then I could hear good between the ground and office. I came in to the 15th pole and heard the tone quite well. I followed out and got the tone with gradually decreasing volume to the end of the mile. The test station is made with porcelain strain insulators.

(a) What in your estimate is the resistance of the grounds?

(b) Will the capacity of the wire, No. 10 B. W. G., explain the facts of the working of the tester?

(c) What should be the insulation resistance per mile of a line?

(d) How would you proceed to locate and correct this trouble, supposing the use of any instruments you might desire?

(e) Can you suggest any other tests or any modification in the ones already used so as to get results?

(a) Your leak is evidently rather high—perhaps 15,000 to 30,000 ohms or more.

(b) Yes.

(c) There is no set standard. Several hundred megohms per mile ought to be maintained.

(d) Use the regular voltmeter test. You may have to cut the line judiciously until you get it. The real cause may be so simple as to surprise you.

(e) Since the leak is so high the loop tests will fail. Cut and test must be the method, using battery in series with a sensitive voltmeter test. Test both wires separately. You will get a deflection on both. Then have a helper open both wires at some point and test again. If it tests clear, the trouble is beyond the helper.

Storage Batteries for a Transmitter Circuit.

We have a magneto exchange and also a direct current 220 volt light system. I want to know if I can use storage batteries for my transmitter circuits. Also give diagrams of wiring for same.

One very good method is to charge the storage battery by placing it in series with all the lights in the exchange. Three storage cells in series will not noticeably cut down

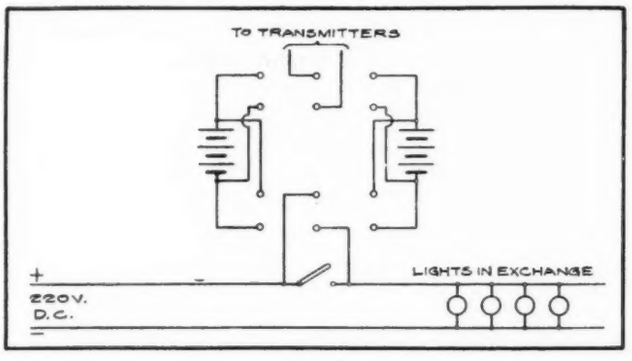


Fig. 1.

the brilliancy of the lights if they have a normal charging current equal to the current required by the lights. Wire as shown in Fig. 1, using two sets of batteries.

Connecting an Extra Receiver to a Set.

I should like to have the following questions answered through the query column of your paper.

In attaching an extra receiver to a common battery set should the receiver be placed in multiple or series?

If multiple is correct, as I have been instructed, why does it not impair the hearing at the end where the receiver is placed, when only one receiver (resistance about 75 ohms) is used by having the shunt of the receiver not in use across the other one?

Place them in parallel, because the rest of the resistance in the circuit is relatively low.

When only one receiver is used you will get louder sound than with two, but the reduction of sound will be greater if the second receiver is placed in series than if placed in parallel.

Night Alarm for Grounded Rural Lines.

We have a local telephone system with several rural lines, all grounded. We wish to install a night alarm on our board but know of no way in which it can be arranged so that the rings between the patrons on the same line will not ring the night alarm. Having ten farm lines connected with our central, we fear that the night alarm would be going all the time and thus be of no use. Is there any way in which it can be arranged in wiring or otherwise so that with a push button or some other means, the night alarm will not ring when parties call one another on the same line?

Use the non-interfering scheme, according to Fig. 2. *R* is a special direct current relay, which responds only to direct, pulsating or rectified current. Alternating current will merely cause its armature to tremble. Equip each telephone with a two-current hand generator so that ordinarily it will give straight alternating current, but by

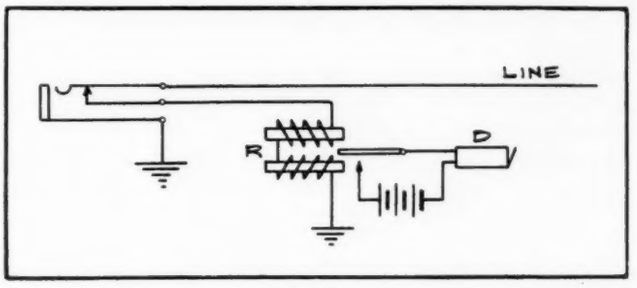


Fig. 2.

pressing a button it will deliver pulsating current to the line. Any of the prominent manufacturers of telephone apparatus can supply both relay and generators, or direct you in changing existing generators.

Ringing with a Pole Changer.

We have a grounded system, and have used a Warner pole changer for probably three months. I have noticed lately that the calling subscriber can hear "Central" signaling the called subscriber very distinctly when using the Warner generator, but when using the hand generator there is no noise to be heard. We use no buzzer on either generator circuit. Would the installing of a buzzer remedy this fault?

We have several lines with two series telephones bridged on a line and on one of these we fail to signal the office bell with the Warner generator, but it rings fine when using the hand generator.

The calling subscriber doubtless hears the ringing by induction, because for at least a short distance all the lines run parallel. The Warner pole changer gives a very peaked wave, which is bad for making noise, while a hand generator is more smooth. The inductance of a buzzer would tend to reduce the trouble.

Regarding the failure of one of two bells to ring, it may be that you have not enough dry cells in the ringing battery of the Warner. Evidently the hand generator is stronger and adding cells to the Warner will bring it up.

The Life of Gladstone-Lalande Batteries.

I would like to ask about the life of the Gladstone-Lalande batteries, when used on Warner pole changer.

The life of the Gladstone-Lalande batteries is usually about 300 ampere hours. One operated on a pole changer for a period of eleven months would correspond to a continuous current consumption of about .0375 amperes. This is about the amount of current it takes to operate a vibrator of the type you mention, and, assuming such a current value, the battery should last eleven months. If the life of this cell seems to have been shorter than this, it was probably on account of the vibrator taking a little more current, due to a different adjustment.

TO WIRE CHIEFS AND MAINTENANCE MEN.

Clearing of troubles which occur in your exchange, inside or outside, may be made the subject of short, practical letters which will interest other telephone men These TELEPHONY *will gladly publish, if illustrated by diagrams or photographs. Simply write a description of the nature of the trouble, tests and location, cause found, and method of repair. Payment will be made for all letters published.*

Notes from the Field

Expert Accountants Report on Rochester Telephone Company.

The examination of the books and accounts of the Rochester Telephone Company from November 21, 1899 to September 31, 1908, by Price, Waterhouse & Company has been completed and the report was submitted to the Common Council of Rochester, New York, last week. The examination was made with a view of giving the Common Council information to assist it in determining whether the rates charged by the telephone company are sufficient to pay a reasonable return on the investment.

In the report, the summary is as follows:

"In considering this question the essential figures to be determined are clearly—

"(1) The amount of investment upon which the company is entitled to claim a return; and

"(2) The net earning derived from the operation of the plant covered by such investment.

"Dealing first with the amount of the investment, the Balance Sheet of the company submitted to the Law Committee of the Council under the date of November 17th, 1908, shows the following investments:

Plants and construction	$1,540,383.77
Securities	348,580.00
	$1,888,963.77

The securities represent investments in outside telephone companies and for the present purpose they should, we think, be eliminated from the consideration of the subject, any income derived therefrom also being eliminated from the earnings and expenses.

"We have made an analysis of the Construction Accounts and find that they may be summarized as follows:

Actual investment in real estate, buildings, plant, etc., in Rochester	$1,012,140.94
Genesee Valley Telephone Company pole lines	3,321.22
	$1,015,462.15
Reconstruction expenditures	72,625.00
Goodwill, discounts on bonds issued, and the like	452,296.61
	$1,540,383.77

In commenting editorially on the report, the Rochester *Evening Times* says: Reduced to simple terms, the expert accountants' report on the financial condition of the Rochester Telephone Company, printed in full in the Common Council proceedings in Saturday's *Evening Times*, shows that if the company could squeeze out of its capitalization all of its mistakes and proceed on the basis of perfected wisdom, with no cost of financing, its income from present business at existing rates would yield a net return of 7.1 per cent, though tending downward.

"As money held idle in bank would yield 4 per cent, this raises in the Common Council the question whether a profit of 3.1 per cent on the enterprise, technical skill and public service represented in this insurance of telephone competition is adequate reward, in view of the certainty that as time shall pass it will decline. Of course, the question really goes further than this; for, practically, in order to survive, the Home company must have more income speedily, since there is no feasible way to disconnect itself from those accumulated obligations which are in the nature of past mistakes. These cling to any enterprise and upon them the public is always assessed, indirectly if not directly.

"But narrowing the problem to its smallest theoretical limits, would the Common Council, if in the position of the owners of the Rochester Telephone Company, consider 3.1 per cent a sufficient profit to induce it to continue in a competitive fight with the Bell telephone combination especially when the signs are that even this small percentage will shrivel unless, by a raise of business rates, the income factor can be increased?

"Or, stated in another way, is it not worth more than 3.1 per cent on a million capital to have in Rochester a competition safeguard against the possible exactions of monopoly? Would not a candid study of experience here and elsewhere lead to the belief that it would?

"As we understand the situation, that is substantially the essence of this telephone issue concerning which the Law Committee has been so long deadlocked. To us it looks quite simple when analyzed."

Texas Independent Association Convention at Dallas, October 28th.

On October 28th and 29th the Texas Independent Telephone Association will hold its annual convention in Dallas, during the State Fair. The Fair Association has given notice in all of its catalogs and has designated October 29th to be known as "Independent Telephone Day." The sessions will be held in the auditorium of the Chamber of Commerce.

The officers report that they expect to make the meeting an excellent one, and most helpful to all who attend. At the last convention the Association adopted the motto, "WE LEAD, OTHERS FOLLOW," and expects to demonstrate this fact at the coming convention.

The Association extends a hearty invitation to all manufacturers and jobbers of Independent goods and their representatives, likewise to all who have the Independent movement at heart among the sub-licencees and those who are not yet members of the Association.

Franchise Question in California to be Settled by Courts.

Los Angeles and Pasadena, Cal., have joined in an effort to procure a rehearing of the famous California telephone case, originating in Pomona, in which the United States Circuit Court of Appeals made a decision that has aroused nearly every municipality of the state.

The court held that the Sunset Telephone & Telegraph Company of California, operating under the state law, has a franchise to use highways and streets of municipalities gratuitously and in perpetuity, and that the municipalities can not exact payment or compensation for the use of them. It appears that at the time the decision was rendered that a dissenting opinion was filed by Judge Gilbert, which has just been made public.

This ruling affects so many cities and towns that the progress of the Pomona case, beginning several years ago, has been followed with interest. It began with an attempt to enforce an ordinance requiring franchise compensation for the use of the streets and was attended with pole-cutting disorder and injunctions. This was repeated last winter at Pasadena when J. P. Wood, City Attorney, undertook to enforce a similar ordinance and the attempt ended in injunction proceedings in the Superior Court before Judge Bordwell.

Recently the mayor and city attorney of Los Angeles and the mayor and city attorney of Pasadena, attended a session of the Pomona trustees and carried out an arrangement whereby the decision is to be attacked by a petition for rehearing. A resolution adopted by the Pomona trustees accepts the offer of the services of Leslie R. Hewitt and W. B. Mathews of Los Angeles, and J. P. Wood and W. J. Carr of Pasadena, and names Robert J. Loucks to be associated with them in the presentation of a petition for rehearing. In case

rehearing is not granted or in case the decision is reversed, the same counsel are authorized to press the case in the higher courts. It was agreed that Pomona will pay all costs of the litigation, but is not to pay for the additional counsel.

The intervention of Los Angeles and Pasadena was deemed necessary as Pomona had failed to establish its case and if the rehearing was not pressed the larger cities might suffer. The decision, as construed by the legal departments of the two large cities, meant that the telephone companies have a right to enter any streets they wish to, erect poles and lines, or lay conduits, in perpetuity under their state charters. This would mean that the cities could not regulate the use of their streets by either telephone or telegraph companies.

In the petition for rehearing the claim of perpetual franchise, freedom from regulation or payment of compensation to a municipality, will be attacked on the ground that the effect of the state law terminates with the limit of a municipality.

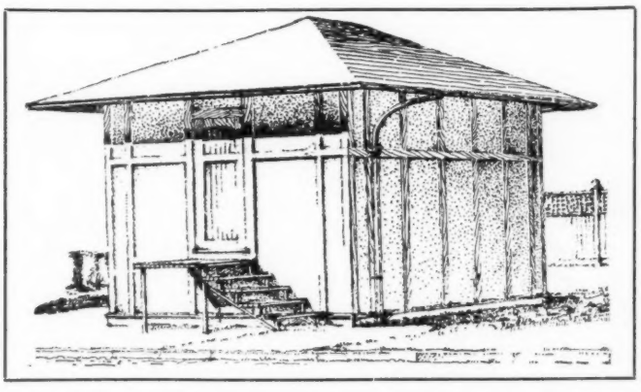
Telephone companies of California are much interested in the case as it affects practically every public service corporation in the state. In Los Angeles, the Home Telephone & Telegraph Company has taken out a franchise and is paying 2 per cent on its gross earnings to the city in addition to the regular tax.

Citizens Company of Columbus, Ohio, to Build More Sub-Exchanges.

The Columbus Citizens Telephone Company of Columbus, Ohio, has started the work of developing its sub-exchanges, which will mean the expenditure of more than $150,000 and the increase to its subscribers' list of possibly 1,250 at the present time and a larger number in a few months. The company has a large number of waiting orders for telephones which it has been unable to take care of because of the lack of sub-exchanges. This condition will be remedied at once and every section of the city will be developed in accordance with the plan of erecting sub-exchanges in various districts.

All the sub-exchanges will be of the automatic variety, as that system has been adopted for not only the city service but for a large percentage of the suburban business.

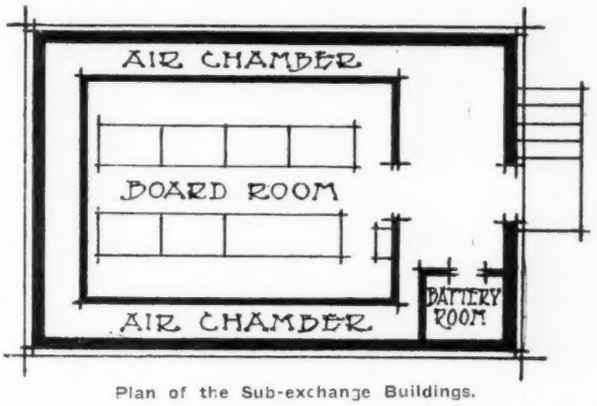
The construction of five sub-exchanges has been begun under the direction of Roy Owens, superintendent of construction, and Gansey R. Johnston, general manager. The exchanges are designed to take care of the northern, eastern, southern, southeastern and the Arlington districts of



Type of New Sub-exchange Buildings to be Erected in Columbus, Ohio.

the city. The last named district is a pretty suburb, inhabited by many of the Buckeye capital's prominent business men. All the sub-exchanges will be unattended, and in order to attain the greatest degree of efficiency, they have to be constructed in accordance with the most recent plans of the officials. About a year ago, the company built several sub-exchanges which were in the nature of an experiment at that time, but which have shown that the plans were of the best. The five newer exchanges will be modeled after the former buildings to a certain extent.

Immediate installation will be made of, respectively, 225, 275, 300, 200 and 100 lines. In addition to the new



Plan of the Sub-exchange Buildings.

exchanges, which are in process of construction, the company is adding 100, 75 and 25 lines, respectively, to the three sub-exchanges which are already in operation. When the work is completed the total number of subscribers will be increased by 1,250. There will also be some cable extensions into new districts, which may ultimately become additional sub-exchange districts.

In anticipation of a possible change of that sort the switchboards upon which the extensions will operate will be distinctive, so that if the additional exchanges are established the switchboards can be moved to the new location or additional switches there established without any change in the numbering system.

In the establishment of the sub-exchanges, the cable now used for subscribers will be utilized for trunks, and in addition the cutting-over of subscribers to the sub-exchanges will release cable for additional subscribers between the sub-exchange districts and the main exchange.

The illustrations show a typical sub-exchange building with parts of the plans. The buildings are all to be erected on small corners cut off of the rear of building lots in such manner as to leave the lot substantially as valuable as before. In one case the narrowness of the lot necessitates the cutting down of the projecting eaves.

One of the difficulties which attend the work of erecting sub-exchanges is to have the inner structure free from moisture. The machinery used in the interior, being of a delicate nature, requires an even temperature and freedom from moisture. In the construction of these buildings, particular care is taken to make them substantially air-tight. No water is to be used in the construction for the purpose of avoiding equipment troubles in the drying-out process, and in order that the building may be fireproof the sides are of asbestos boards, painted with a water-resisting paint. Asbestos shingles will cover the roof.

As an additional precaution against dampness and change of temperature, provision will be made for electrical heat and for a gas stove which will be entirely closed against the air of the room and will get its draft from and discharge its gases outside of the structure. There will also be provision for exposing small quantities of lime in the inner room to absorb atmospherical moisture.

The battery room will be entirely separated from the switchboard room and will have its own ventilating pipes. Drainage is provided to take away from the building not only the water from the roof, but also any that may tend to seep in from the ground surrounding the structure.

The walls of the building are to be of concrete, to which is to be added a sufficient quantity of Medusa waterproof-

ing compound to properly waterproof the concrete. The concrete is to be thoroughly dry mixed, then wet and remixed and put in the forms and carefully settled in place.

The Petroleum Telephone Company's New Directory.

The Petroleum Telephone Company, operating exchanges in Oil City, Franklin, Titusville, Clintonville and Pleasantville, Pa., recently issued a directory covering the list of subscribers in these exchanges, also the various rural exchanges. On the front pages of the directory the company has printed rules regarding the use of the telephones and hints on what and what not to do. On one page, in large type, is the following reference to the company's growth: "Nine years ago the Petroleum Telephone Company entered the field. Eight years ago the Petroleum Telephone Company could connect you with only 800 subscribers. See the list now." On another page under the caption "Don't You Know?" attention is called to the fact that the company connects with all Independent companies within 200 miles, covering the territory of western New York, western Pennsylvania, Ohio and portions of Virginia, West Virginia, Indiana, Maryland and Kentucky. A list of the cities which may be reached is also given. Local connection may be had with over 5,000 telephones, and it is said that the company has 100 per cent more subscribers than any other telephone company in the same territory. The officers and directors of the company are: President, P. M. Speer; treasurer, C. M. Lamberton; secretary and general manager, William S. Paca. W. E. Hayes, W. A. McMaster, P. M. Speer, E. C. Hoag, R. G. Lamberton, George B. DeKalb and W. S. Paca are the directors.

Western Pennsylvania Independent Telephone Association.

The organization of the Western Pennsylvania Independent Telephone Association was perfected on July 14 and 15, at a meeting of representatives of Independent telephone companies in western Pennsylvania, which was held at Washington, Pa. Several preliminary meetings were held early last Fall, the second one having been called on account of a misunderstanding which arose among some of the companies over some farmers' lines that connected at Parker's Landing. Because of the good results obtained through this meeting it was decided to permanently organize, but it was not until the July meeting that the by-laws were adopted. The men who gathered at this meeting at Washington represented over 72,000 telephones, and it is anticipated that the 100,000 Independent telephones in this field will, in time, come under the jurisdiction of the Association.

The purpose of the association is to bind into firmer union, telephone interests in all counties west of Potter, Clinton, Centre, Huntington and Fulton, Pa., and the adjoining territory.

Telephones in Grand Rapids Hospital Camp.

The Citizens Telephone Company of Grand Rapids, Mich., was recently awarded the contract for equipping the contagious disease hospital camp in that city with a telephone system. Branch telephones will be installed in the various tuberculosis shacks, the administration building, scarlet fever, smallpox and diphtheria hospitals. The telephones will prove a great time and labor saver to the nurses, who now are compelled to run about from one building to another in caring for the patients, receiving orders, etc. Patients of the camp will also be provided with portable telephones. The purchasing committee of the Board of Health received bids for the installation of this system from both companies operating in the city, and the contract was awarded the Citizens company, although it is reported that the price was considerably higher than the rates asked by the opposition company.

Independent Telephone Company of Kalispell, Mont., to Build.

At a recent meeting of the stockholders of the People's Home Telephone Company, of Kalispell, Mont., the directors approved the building plans for a two-story brick building to be used as an exchange building, and to cost $10,000. The building is to be erected on lots recently purchased. Just as soon as the specifications are drawn up by the architect, bids will be called for and the construction commenced. At this meeting, the employment of J. Fred Malthamer, of Minneapolis, as permanent engineer was approved. The officers of the company are Ben C. Hyde, president; W. H. Griffin, vice-president; E. C. Hedges, secretary and treasurer; directors, W. H. Griffin, E. C. Hedges, D. F. Smith, W. L. Carter, C. B. Harris, C. J. Bain and B. C. Hyde.

Telephone Men Form Secret Society.

Independent telephone men met in Dallas, Texas, August 7, and formed a secret society, which those interested think will, in time, spread over the entire United States. The new society will be known as the Knights of the Shield, and only those interested as owners, stockholders or employes in the Independent telephone field, or engaged in the manufacture or sale of Independent telephone apparatus, are eligible for membership Officers were elected as follows: J. C. Casler, grand inductivator; H. D. Eberle, exalted buzzer-jop; T. A. Gould, supreme condenser; C. A. Shock, universal wire chief; J. B. Treascott, transpositor; D. C. Lingo, meghohm; W. H. Upham, ampere. The following trouble shooters were also selected: Jack Milburn, E. M. Chamberlain, H. B. Bomar, Aaron Smith, W. S. Kingsbury and J. L. Norman.

Keystone's July Report Shows Increase Over Last Year.

The gross earnings of the Keystone Telephone Company, of Philadelphia, for the month of July show an increase of $2,684 over the corresponding month of last year. The following table schows the comparative income account for July for 1908 and 1909:

	1909.	1908.
Gross Earnings	$91,020	$88,336
Operating expenses and taxes	45,533	45,098
Net earnings	$45,487	$43,238
Bond interest	25,802	26,198
Renewal reserves	8,333	8,333
Surplus	$11,352	$ 8,707

Obituary.

It is with regret TELEPHONY announces the death, July 29, of Mr. Robert McLaughlin, manager of the Bergholz Telephone Company at Carrolton, Ohio, since the beginning of this exchange six years ago. Mr. McLaughlin built up the Carrolton, Harlem Springs, Woodstown, Augusta, Perryville, Richmond, Malvern, Mechanicstown, Waynesburg, and New Harrisburg exchanges, as well as doing efficient work in the upbuilding of the Bergolz and Amsterdam exchanges. He was a self made man having acquired his telephone knowledge by actual work, and his loss is greatly felt by the companies with which he was affiliated.

Civil Service Examination for Electrical Assistant in the Signal Service.

On September 29, 1909, the Civil Service Commission will hold competitive examinations at various points throughout the United States for the position of Electrical Assistant, Signal Service at Large.

Detailed information relative to the places of examination, etc., may be obtained from the Civil Service Commission, Washington, D. C.

Patents Relating to Telephony

By Max W. Zabel

TELEPHONE TRANSMITTER.

A. G. Kaufman, New York, patent 931,127, Aug. 17, 1909. Assigned to American Callaphone Co., New York.

This device comprises a plate upon which are mounted a great many transmitters used in so-called callaphone systems. The transmitters mounted on the plate have felt interposed so that outside noises will not affect them. The plate is provided with counterweights so that it can be raised and lowered to adjust the transmitters, and the counterweight is suitably supported within a tube having poles at its upper and lower ends from which the plate is supported. The plate may be mounted on the wall by means of springs.

ELECTRIC GROUND CLAMP.

F. Stevens, Philadelphia, Pa., patent 931,706, Aug. 17, 1909.

This ground clamp has two corrugated interlocking semi-circular sections, which fit around the pipe, and a bolt to screw the free ends together tightly against the pipe. An extension having serrated sides, is provided and holds the insulated wire adapted to be fastened to the clamp, the wire itself being rigidly secured to the clamping bolt.

TELEPHONE EXCHANGE SYSTEM.

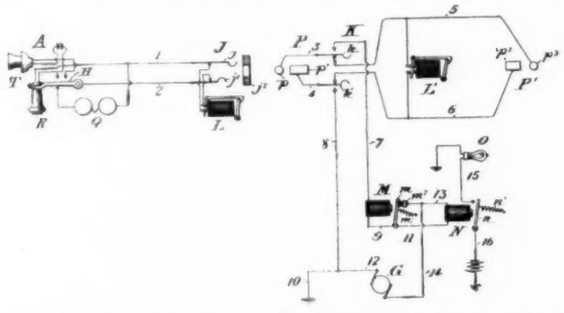
Harry G. Webster, Chicago, Ill., patent 930,514, Aug. 10, 1909. Assigned to Milo G. Kellogg, Chicago, Ill.

This common battery system consists of a cord circuit having but two supervisory relays which give the necessary signals without the aid of a ground at the substation. The supervisory relays have two windings serially bridged across the cord circuit, but a conductor connects midway between the terminals of these windings to battery. It is plain that this simplifies the cord circuit without sacrificing any of the advantages claimed for the four-relay cord circuit.

CORD CIRCUIT.

W. W. Dean, Elyria, O., patent 932,003, Aug. 24, 1909; assigned to the Dean Electric Co.

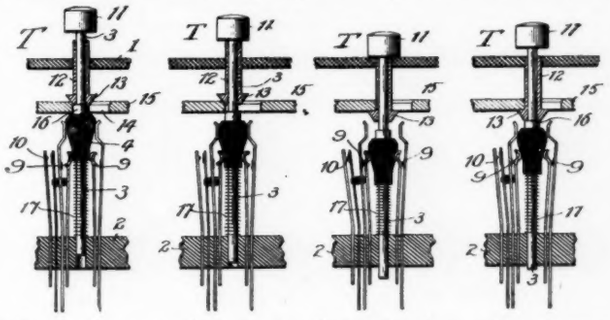
The devices set forth in this patent are used to overcome the difficulties of having a lamp resistance in the generator circuit at the central station. It is claimed that when ringing over high resistance lines, the resistance of the lamp is at a maximum, whereas, when ringing over short-circuited lines, the lamp becomes hot and its resistance reduced, thus injuriously affecting the generator. To overcome this, the ringing key *K* has associated with it, the relay *M*, connected as shown for controlling the generator *G*. The relay *M* has carbon contacts to introduce a high resistance when ringing over a short-circuited line, so that the relay will flutter, thus preventing the short-circuiting line from absorbing all the generator current. The lamp *O* is used to indicate when this occurs.



SWITCH KEY.

N. H. Holland, Chicago, Ill., patent 931,202, Aug. 17, 1909; assigned to the Western Electric Co., Chicago, Ill.

The selective key here shown has the plungers 11, which can be held in a depressed position by a plate 15, and are released when a second plunger is depressed. The features



of the device are: that the insulating head 4 of the plunger, in its downward path, when it is in its most depressed position, closes circuit with all of the springs, as shown, but when partially released, and while maintaining the springs 9, in connection with their associated springs, opens contact at the point 10. The keys are mounted in banks.

TELEPHONE EXCHANGE SYSTEM.

Harry G. Webster, Chicago, Ill., patent 930,517, Aug. 10, 1909. Assigned to Milo G. Kellogg, Chicago, Ill.

This patent covers a new two wire system in which but two wires are used for running the various telephone lines through the switchboard and through apparatus. The invention contemplates a cut-off relay having twin windings which are non-inductively wound as respects the talking current. The transmission current is supplied in bridge of the cord circuit, and a normally direct earth connection is provided on that line limb associated with the testing terminal.

AUTOMATIC POLE CHANGER.

F. H. Williams and C. W. Welch, Green, N. Y., patent 931,242, Aug. 17, 1909.

This pole changer consists of an ordinary horseshoe magnet with one coil between its legs actuating an armature which faces both of the legs of the permanent magnet. The armature actuates circuit reversing springs, the arrangement being such that the ringing key starts the pole changer in operation. Only one battery is required for ringing, and for actuating this pole changing relay to vibrate the armature, thus eliminating the ordinary primary batteries.

AERIAL CONDUCTOR.

S. Eisenstein, Kiew, Russia, patent 930,746, Aug. 10, 1909.

This patent covers a new type of aerial conductor for wireless telegraphy, and employs a large plate, having large supplemental capacity, which connects with the antennae through a small impedance coil, and from there to the ground. The patent describes in detail the mathematical features involved.

TELEPHONE DESK STAND.

J. A. Birsfield, Chicago, Ill., patent 931,179, Aug. 17, 1909. Assigned to Alfred Stromberg, Chicago, Ill.

The desk stand of this patent consists of the ordinary base and tube with the switchhook lever mounted at the top of the tube and a rod extending down through the tube. The rod

actuates the switching springs mounted upon a separate plate in the base. The cover plate over the lower portion of the base is provided with a resilient washer so placed that it is immaterial which side is placed within and which without. The cover plate is held within the base by being screwed to a strut fastened within the base. The patent also describes a form of transmitter knuckle but no claims are directed to this feature.

GUY ANCHOR.

O. Henderson, Detroit, Mich., patent 930,486, Aug. 10, 1909.

This guy anchor consists of a supporting plate, through which the blades may project and which has a screw threaded extension terminating in an eye for holding the guy wire. The blades are mounted upon a carrier having a screw threaded engagement with the stem. After the anchor is placed in the ground and the rod rotated, the blades project into the earth and hold the anchor in place.

TELEPHONE SYSTEM.

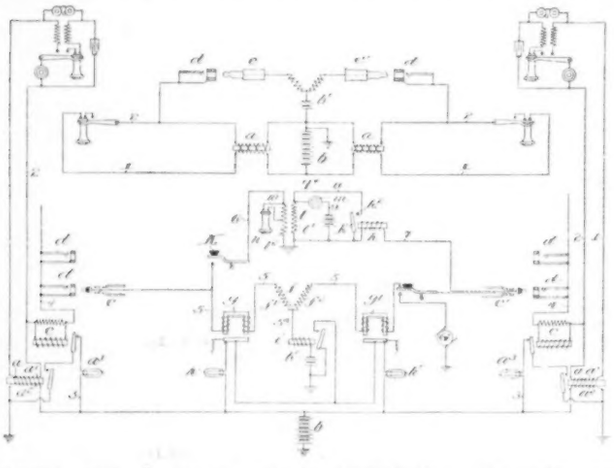
Harry G. Webster, Chicago, Ill., patent 930,518, Aug. 10, 1909. Assigned to Milo C. Kellogg, Chicago, Ill.

This common battery system shows means whereby supervision can be had in a cord circuit without relays, and to this end each supervisory signal is connected directly in circuit between the source of current and a contact of the corresponding connecting plug. The line relay has associated with it a resistance so arranged that it may be cut into and out of circuit with coacting terminals of the multiple jacks, so that when a plug is inserted a circuit is completed either through or around the resistance, according to the position of the switchhook at the substation.

TELEPHONE SWITCHBOARD SYSTEM.

J. L. McQuarrie, New York, N. Y., patent 931,330, Aug. 17, 1909. Assigned to Western Electric Co., Chicago, Ill.

This system is designed so that but one cord conductor is necessary to unite any two common battery lines entering an exchange. In the illustration, 1 and 2 represent the parallel lines of a subscriber's line entering an exchange, and they are connected through the relay *a* with the central office batteries *b*, having one pole grounded. The windings on the magnet *a*, are wound in close inductive relation to each other and are so connected that the effect of currents flowing

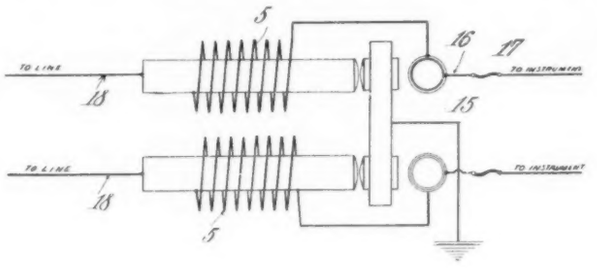


through them in series will be cumulative. To unite any telephone circuit with either line, such other circuit is connected in a shunt about one of the magnet windings so that the windings are thus connected in parallel with respect to currents in the telephone circuit thus established. The impedance of each winding to telephone current flow in the united circuit, is thus neutralized by the effect of current in the other parallel winding.

LIGHTNING ARRESTER.

Wm. Gifford, Traverse City, Mich., patent 931,408, Aug. 17, 1909

This lightning arrester consists of two cores, to which the line wires are connected, and which are extended through the coil 5 to the instrument. The cores are slightly



rounded, as illustrated, and a metallic support carries a metallic block, which is adjacent to the rounded end of the core, and is connected to the ground. Hence lightning, instead of traveling through the coil, 5, travels directly through the core to the grounding plate, thus protecting the telephone, it is claimed.

TELEPHONE EXCHANGE SYSTEM.

Harry G. Webster, Chicago, Ill., patent 930,519, Aug. 10, 1909. Assigned to Milo G. Kellogg, Chicago, Ill.

A cut-off relay having two windings, one terminal of each winding being connected together and through impedance coils to battery is the principal feature of this patent. The other terminal of one winding goes to the spring jack and the other terminal of the other winding to the substation. When initiating a call, current flows through one of the windings and when the operator answers a current through the other winding causes the armature of the cut-off relay to break the lamp connection. The two windings are serially in one side of the talking circuit, but a non-magnetic shell is provided so that these coils do not interfere with transmission.

TELEPHONE EXCHANGE SYSTEM.

Harry G. Webster, Chicago, Ill., patent 930,521, Aug. 10, 1909. Assigned to Milo G. Kellogg, Chicago, Ill.

A test circuit for common battery telephone exchanges is the subject matter of this patent, and utilizes a relay which is common to all of the cord circuits of an operator's position, the test relay having branch connections, one normally extending to a contact of each multiple jack. Means are provided for disconnecting the relay from the contact of the multiple jack when its two contacts are connected together, and a supervisory signal is provided which is operated when the contacts are so connected.

RENT COLLECTING MEANS FOR TELEPHONE SERVICE.

R. Yearneau, Clark, S. D., patent 931,547, Aug. 17, 1909.

This coin controlled device consists of a coin box which has openings corresponding to the number of coins necessary to pay for a predetermined period of rental, as, instance, a month. At the end of the time the operator at the central office deposits the coins in the box, after which no service can be had until another lot of coins is deposited to insure another thirty days service.

MONOTELEPHONE RELAY TRANSFORMER.

P. E. Heina, Paris, France, patent 930,753, Aug. 10, 1909.

This patent relates to a monotelephone relay transformer, which has a circular plate of magnetizing material. The vibrations of the plate are used to produce variations in the equilibrium of a relay, and to operate simultaneously

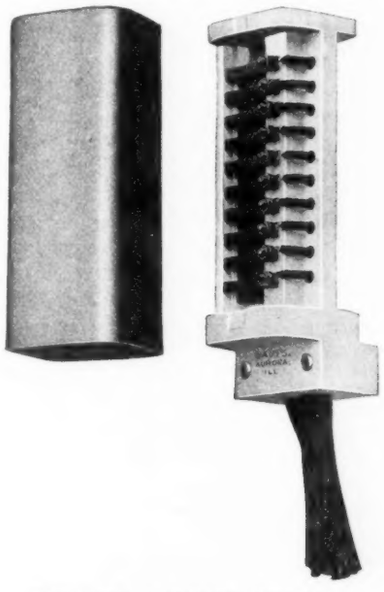
printing mechanisms in the receiving station of the same circuit and in both directions. The features claimed are that monotelephones of this type can be used for printing mechanisms such as the Hughes or Baudot type. The result is accomplished by means of an oscillating balanced lever, whose equilibrium and mass are determined by the number of oscillations of the lever in proportion to the vibrations of the magnetizable plate. The lever is designed to make two or three oscillations while the plate may make from 250 to 1,000.

From the Factory and Salesroom

The Davis Lightning Arrester.

In the study of lightning it has been found that the principles followed are those which have been worked out as applying to static electricity of which lightning is a form. It has been found that since any charge is self repulsive, there must be, at every point of surface of a charged conductor, an outward pressure against the surrounding dielectric. The surface density increases with the curvature of the surface, but the repulsion increases still more rapidly, varying as the square of the density; therefore the repulsion increases as the square of the curvature. When the density becomes about a hundred electrostatic units per square centimeter, the electrification cannot be retained upon the conductor, and sparks fly into the surrounding air. The discharge takes place most readily where the density is the greatest. On a sphere, the density is uniform, but on a triangular shaped conductor, it is greatest at the smallest point. Since the air in contact with such a point is similarly electrified, and therefore repelled, an air current passes from the point, and the charge is dissipated by convection. As a general thing, points and sharp edges are avoided in apparatus for use with static electricity, but in the Davis lightning arrester they have purposely been provided.

This arrester which is intended for pole lines is made up in five pairs and will take care of one ten pin cross arm full of wires. On a lead where more than one arm is used, it is recommended that an arrester be placed on each cross arm. As shown in the illustration, the arrester is designed to be fastened to the center of the cross arm and the spider wires



The Davis Lightning Arrester.

fanned out each way and fastened to the under side of the arm. This protects them from rain and sleet, as well as other interferences.

The arrester proper consists of a long ground strip of corrugated carbon mounted on a porcelain base, the corrugations being triangular in shape, with the point or apex of each triangle facing out. Across this corrugated strip are set small triangular carbon pieces with the points lying against and across the point of the strip, but separated by a very small air gap. These individual, triangular pieces are set in metal holders, to which the spider wires are fastened by means of locknut binding posts.

A sectional view of the carbons, assembled on the bases, would look like a checker board. The lightning discharge passes from the point of the small triangular carbons to the points of the corrugated carbon ground strip, any dust falling down to the bottom of the terminal.

The base is made in one piece, of high grade porcelain, with separate outlets in the bottom for ground and spider wires. Holes through the body of the base are also provided to guard the spider wires, leading in to the locknut binding posts and holding them separately and securely in position. A heavy galvanized iron cover, placed over the entire base, makes it impervious to moisture.

It is claimed that the Davis arrester combines all of the good points sought in apparatus in this line, and the manufacturer believes he is offering the most complete medium of relief against lightning and similar troubles, that has ever been devised.

Mr. Davis' address is 173 Middle avenue, Aurora, Ill., and he will be glad to fill trial orders for samples of the arrester, and believes that an examination of the samples will conclusively prove that the arrester possesses all and more good points than are claimed for it.

Mr. Leigh S. Keith Joins McMeen and Miller's Staff of Engineers.

McMeen and Miller have sent out announcements of the addition to their staff of specialists of Mr. Leigh S. Keith. He will devote himself to engineering problems relating to telephony, electric light and power, and gas and will be particularly engaged in investigations and reports on public service systems and plants.

Mr. Keith graduated in electrical engineering from the Massachusetts Institute of Technology in 1900. For a number of years, he was engineer in charge of central office installations for the New York Telephone, supervising the installation of some of its largest central office equipments. He spent several years in making a broad study of the operating and economic features of the various telephone systems, both automatic and manual, in this country and abroad. Mr. Keith has made extensive investigations of telephonic transmission and traffic and has also done engineering work in the field of electric light and power, and gas.

McMeen and Miller are especially fortunate in securing Mr. Keith's services as his training and experience render him especially well equipped for general engineering practice.

The De Veaux Company's New Catalog.

Catalog Fourteen, recently issued by the De Veaux Telephone Manufacturing Company, of Brooklyn, N. Y., is very complete, going into detail on all the telephones and supplies

manufactured and sold by this company. A complete description with illustrations of the new type all-metal ball-bearing automatic telephone is given. Descriptions are also given of the new ball-bearing intercommunicating automatic telephones, desk telephones, school, apartment house and vestibule telephones, electrical reset annunciators, lamp annunciators, and the various fire alarm sets, besides complete descriptions of the standard types of switchboards manufactured by the company. About fourteen pages of the book are devoted to full sets of wiring diagrams and specifications, which alone should be a great aid to telephone men.

The De Veaux company, with a branch office and salesroom in New York City, announces that these books will be sent to any one requesting a copy, free of charge. Telephone men would do well to avail themselves of this opportunity of procuring this catalog for their files.

Bucyrus, Ohio, Adopts the Automatic.

The Automatic Electric Company of Chicago, has sold a complete automatic equipment to the Bucyrus Telephone Company, Bucyrus, Ohio, providing for 850 individual lines, 200 party lines and not less than 1,100 telephones for present installation. The company will occupy new quarters in a brick building which will be remodeled for the purpose. The outside plant is now undergoing reconstruction. It is expected to expend about $75,000 on improvements, including the Automatic system. The new apparatus is to be installed this winter and be ready for operation next May.

The officers of the Bucyrus company are: President, John A. Chesney; vice-president, Herbert Blair; secretary, Albert G. Stoltz; directors, Wm. Miller, Benjamin Shearer, John T. Wentz.

Sherarduct Conduit.

An excellent example of a trade publication is furnished by a pamphlet just issued by the National Metal Molding Company, Pittsburg, describing Sherarduct conduit and setting forth its merits. The literary character of the text is such as to create respect for its matter, and the typography is good in design and in execution. The conduit described, which is of steel that bends easily, is treated by the Sherard process, by means of which, it is claimed, corrosion is entirely prevented even under the most adverse circumstances.

THE AMERICAN CONDUIT COMPANY of New York and Chicago, is mailing out a card illustrating and describing a portable power pump. It is said that the pump can be used to advantage in pumping water out of manholes. The size described, pumps 335 gallons per minute, is 36 inches long, 28 inches wide, 30 inches high and weighs 375 pounds. It is direct connected to a gasoline engine which when in operation consumes gasoline at the rate of 3½ gallons per 10 hours.

THE HOMER ROBERTS COMPANY, of Chicago, Ill., has just issued "Bulletin F," which deals with the Roberts Selective Lock-Out Party-Line Telephone System, and gives a very thorough description of the same. The book gives full details of the Roberts system, manner of making calls, operating features, maintenance and battery cost, branch line selectors, and many other features of the system, and is likewise amply illustrated, showing the various pieces of apparatus used in the system and their working order.

THE ATLAS ANCHOR COMPANY, of Cleveland, Ohio, would like to send to all telephone companies interested in anchors its new folder, entitled "Anchor Economy." This folder tells briefly and intelligently what the Atlas anchor will do, and shows effectively its special points of merit. Perhaps the most conclusive argument offered is the fact that its manufacturers offer to send it on a sixty-day test, guaranteeing that it will hold in any solid soil more than its connecting rod and will not creep after being properly set. With the outlook ahead for more than the usual amount of construction work this fall, it will be well for interested buyers to post themselves regarding anchors.

MATHIAS KLEIN & SONS are sending out cards announcing that after September 1 their address will be 562-564 Van Buren street, Chicago, Ill. This is not a change of location, but simply a change of street number due to the new system of house numbering in Chicago which went into effect the first of the month.

THE JOHN L. ROPER LUMBER COMPANY, of Norfolk, Va., calls attention to Juniper crossarms, which it contends need no treatment for preservation, and states that this is proven by experience. The company paints the arms with a mineral paint simply for improving their appearance and also for protection against the elements, but claims that even without the paint they will last almost indefinitely.

THE INTERNATIONAL ACHESON GRAPHITE COMPANY, of Niagara Falls, N. Y., has just issued a new folder descriptive of its various products, which include electrodes, dry battery filler, paint pigment, electrotyping leads, graphite for lead pencils, firearms lubrication, general lubrication and graphited greases. The folder is handsomely printed in two colors, and will be appreciated by many as a catalog in miniature.

THE HOYT ELECTRICAL INSTRUMENT WORKS, of Penacook, N. H., recently purchased a lot fronting 100 feet on Main St., Penacook. This street forms part of the Central Trunk Boulevard which is being built through the White Mountains. A modern fire-proof garage and salesroom will be erected on the property, as the other plant of the firm is to be used exclusively for manufacturing purposes.

H. B. MARSHALL, who has been connected with the Chicago sales office of the Electric Storage Battery Co., of Philadelphia, for many years, has been appointed contract agent for the company, in charge of the St. Louis office in the Wainwright Building. Taliaferro Milton, formerly contract agent of the St. Louis office, has been appointed engineer of the Chicago sales office of the company.

W. H. HYDE & COMPANY, Milwaukee, Wis., have recently published the 13th edition of Hyde's Telephone Troubles and How to Find Them. This little booklet treats of both magneto and common battery systems, and is designed in fact as a manual of construction, labor and cost units for estimating work.

THE CENTRAL ELECTRIC COMPANY, Chicago, Ill., is distributing several new flyers descriptive of dry batteries. The batteries described are intended for open circuit service, and are claimed to give maximum service with minimum cost, owing to the use of the highest grade of material, best methods of treatment and modern machinery in their manufacture.

W. N. MATTHEWS & BROTHER, St. Louis, Mo., have just issued a catalog which illustrates and describes the methods of installing their specialties. Over half of the pamphlet is devoted to interesting wire tables and other data useful to men engaged in any branch of the electrical industry.

THE AMERICAN SEWER PIPE COMPANY has sent out announcements of its removal, August 28, from Pittsburg, Pa., to Akron, Ohio.

A New Sales Organization.

The Michigan Electric Specialty Company of Muskegon, Mich., which conceived, developed and put upon the market the Vac-m lightning arrester, announces that it has assigned all its rights, interests and titles to the National Electric Specialty Company of Muskegon and Toledo, Ohio.

This company was recently organized for the purpose of pushing the sales of the Vac-m arrester, also the Ritetite self soldering wire joints.

The self soldering wire joint is another specialty which has been developed by the Michigan Electric Specialty Company, but has never been put upon the market. It consists of a metallic tube with a soldering material inside of it and an outer coat of inflammable material. In use, after the two ends of wire to be joined are inserted in the tube, a lighted match is touched to the outside of the tube. The inflamable outer coating creates sufficient heat to melt the inside coat of soldering. The wires are then pushed into the tube, end to end. The whole is allowed to cool with wires in position.

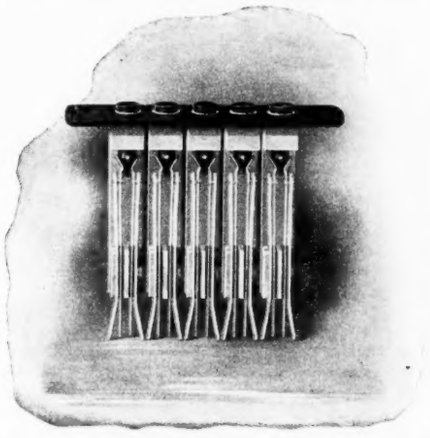
This joint when completed is said to be absolutely waterproof and to never rust while its tension strength is claimed to exceed that of the wire itself.

Hartford City, Ind., to Install New Equipment.

A number of improvements are being made in the switchboard of the United Telephone Company of Hartford City, Indiana. Transfer and order wire circuits are being installed in seven positions and the board is also to be equipped with an improved clearing out system.

The type of order wire key to be installed is shown in the illustration and it will be seen that it is of an extremely convenient design. Each frame is entirely separate from the others and a single frame with its contact springs can be removed from the escutcheon without interfering with the operation of the others. It is, however, seldom necessary to remove a frame for the contact springs are on the outside of the frames where they can be reached easily and most troubles quickly cleared.

The clearing-out system to be installed is one of those developed by the Monarch Telephone Manufacturing Company. This particular system is such that it is impossible



Type of Order Wire Key to be Used on the Hartford Switchboard.

to tie up lines owing to failure of the clearing-out drop to operate. No matter what the line conditions are, a ring off is sure to throw the drop.

Eighty-four plug seat switches of the type with dust-proof contacts are to be used.

Both the order wire keys and plug seat switches will also be furnished by the Monarch company.

Condensed News Reports

Officers of companies are earnestly requested to forward us promptly all financial and other statements as soon as issued and any items of interest as to their plants and systems

NEW COMPANIES.

GIBSON CITY, ILL.—The Drummer Telephone Company is the name of a new company incorporated at this place, and instigated by farmers who became dissatisfied with the service of the local company. The company is incorporated at $5.000 and D. A. Taylor is president, and with Wm. Osborn, Wm. Crows, Wm. McKeaver, Wm. Day and C. F. Barrow, serving on the board of directors.

STONE CHURCH, ILL.—Articles of incorporation have been filed by the Northwestern Telephone Company to build through the western part of the county, headquarters to be at that place. President, H. R. Boescher; secretary, Louis Lammers; treasurer, Victor Grattendich.

DECKER, IND.—The White River Valley Telephone Company filed articles of incorporation with the recorder of Knox county recently. According to the incorporation papers the capital stock is to be $10,000 and the offices of the company at Decker. The incorporation is for the purpose of operating telephones, telephone lines and telephone exchanges at Decker. The life of the corporation is named as 50 years and the incorporators are James F. Breithaupt, Daniel N. Lane and Richard Ready.

HUTCHINSON, KANS.—The Southwest Kansas Independent Long Distance Telephone & Telegraph Company was organized in that city a short time ago and incorporation papers were filed. The company will operate between Hutchinson and Liberal, taking in on the circuit, Pratt, Cullison, Wellsford, Haviland, Greensburg, Mullinville, Bucklin, Ford, Dodge, Kingstown, Ashland, Minneola, Fowler, Meadem Plains, Arkalon and Liberal.

The directors are: C. A. Sloan, Pratt; R. A. Branon, Minneola; F. A. Gresham, Bucklin, Mr. Bennett and Mr. Williams, Meade, and Robert Burns, Hutchinson.

CORNETTSVILLE, KY.—The Cornettsville Telephone Company has just been organized here by William Cornett and Arch Cornett as the principal stockholders, capital stock $1,000, for the purpose of building an Independent telephone system in Cornettsville, and also will construct lines from Cornettsville to Hyden, 39 miles, and from Cornettsville to Tillie and Gourd, 25 miles. William Cornett is manager of the company.

PILOT ROCK, KY.—The Pilot Rock Telephone Company has been organized here by Wilson Allen and others, with a capital of $500 to construct local Independent lines from Pilot Rock to Saltwell, a distance of 12 miles, construction to begin at once. Wilson Allen is manager of the company.

WITCH, KY.—The Defeated Creek Telephone Company, organized here a few weeks ago by W. M. Brown and others, of Witch, will begin at once the construction of a local Independent telephone line from Witch to Defeated Creek, via Dirk, a distance of 12 miles. W. M. Brown is manager.

EAST HEBRON, ME.—The East Hebron Telephone Company is the name of a new corporation formed with a capital stock of $10,000. The promoters of the company are: A. N. Fogg, F. J. Dunbar, East Hebron; E. E. Johnson, U. H. Packard, Geo. E. Needham, W. W. Harrington, Pratt; P. Brown, Hebron.

DALTON, MICH.—Articles of incorporation have been filed at the county clerk's office by the Dalton Telephone Company. A capital stock of $5.000 is shown, and the company proposes doing a general telephone business in Dalton township. Two managing directors of the company are E. F. Plunkett and C. C. Plant.

CONWAY, MO.—The Conway Farmer's Telephone Company has filed articles of incorporation, capitalized at $2,500. J. M. Ragland is authorized agent of the company.

CAMDEN, N. J.—C. T. Leland, C. W. Rambo and W. E. McDonald are the incorporators of a new company, the Railway Building and Operating Company. Capital stock is $125,000. Among several other things the object is the construction of telephone and telegraph lines.

OSWEGO, N. Y.—Articles of incorporation have been filed for a charter for the Oswego Center Telephone Company. The capital stock is placed at $1,000 and the directors of the company are Arthur H. Todd, Peter O'Neill, James Calkins, Miles G. Shelhamer, Frank Cooper, William Fenski and H. H. Phillips.

MUNICH, N. D.—The Rosehill Farmers' Telephone Company has been incorporated with a capital stock of $5,000. John M. Enns, Isaac P. Toews, D. H. Unran are incorporators.

TAYLOR, N. D. (Stark Co.)—The People's Telephone Company was organized here a short time ago by S. L. Price, Taylor, N. D.; E. Paulson, Knife River, N. D.; A. J. Hennings, Emerson, N. D., and others. Capital stock placed at $10,000.

WOODBURN, ORE.—The United Telephone Company is the name of a new company organized at this place. The company has a capital stock of $20,000 and the incorporators are W. H. Waterbury, Blaine McCord and Wm. Wishles.

COUPON, PA.—The Gallitzin Township Telephone Company was recently organized at Coupon with these officers: President, Joseph Myers; vice-president, Henry Conway; secretary, George Mazenko; treasurer, Peter Delozier. Directors: Thomas P. Myers, Joseph Ramer, and the Rev. Dwyer. The line will connect with Altoona through Glen White and will extend to Coupon, Elstie, and Mark Hanna.

INTERCOURSE, PA.—The Intercourse Telephone Company has been incorporated with a capital stock of $10,000.

PIERRE, S. D.—Articles of incorporation were filed recently for the Pierre and Southeastern Telephone Company, with headquarters at Pierre, and a capital of $100,000. It proposes to do a general long distance business, in the country south and southeast of this city. The incorporators are Albert Gunderson, Frank B. Rowe, Pierre; Albert Saveland, Chicago, Ill.

LA GRANGE, TEX.—The Southern Texas Telephone Company has been incorporated at this place with a capital stock of $20,000. C. C. Robson, H. C. Shumaker and M. V. Povlitz are the incorporators.

SAN DIEGO, TEX. (Duval Co.)—With a capital stock of $11,000, the S. G. Smith Telephone Company has been incorporated at this place. S. G. Smith, J. G. Garcia and W. W. McCampbell are the incorporators.

CHARLES CITY, VA.—With a capital of $5,000 and H. S. Saunders, president, Shirley, Va.; H. T. Harrison, vice-president, Bradley's Store; L. M. Nance, secretary and treasurer, Roxbury, the Charles City Telephone Company was recently incorporated.

WAVERLY, VA.—The Surrey and Sussex Telephone Company is the name of a new telephone company. J. E. Wilcox is president; J. W. Rogers, secretary and treasurer, and W. O. Rogers, of Savedge, Va., manager. The two former officers of Waverly.

BONDUEL, WIS.—The Bonduel Telephone Company, with a capital stock of $5,000 has been chartered to do a general telephone business. C. Bonnin, W. K. Felkenhener and Robert Pitt are the incorporators.

BRUSSELS, WIS.—A new company organized here goes by the name of the Sturgeon Bay & Gardner Telephone Company. The capital stock is $1,500, and the incorporators are, Hubert Dandors, S. A. Geise and Jule Gerondale.

FRANCHISES.

PEET, WIS.—The Yellow River Telephone Company is the name of a new telephone company organized at this place. The incorporators of the company are Arthur Wright and others, and the capital stock is placed at $3,000.

FRANKLIN, LA.—A franchise has been granted F. E. Gressett of Meridian, Miss., extending over a period of twenty-five years, for the installation and operation of a telephone system. Mr. Gressett has already purchased the small system now in operation in this place and will rebuild and enlarge the entire system, building a metallic line to some point on the Illinois Central Railroad, which may possibly be Fernwood, via Tylertown, Miss.

HINDMAN, KY.—The Knott County Telephone Company here has secured a franchise to build lines over any part of Knott county. It is announced that a number of short line branches will be constructed during the year. Irvine Napper is manager of the company.

FINANCIAL.

ALPINE, TEX.—A new telephone company, of which the principal parties interested are A. M. Turney, John A. Hardy and N. Irving, has been granted a franchise to construct a telephone system in this town.

GLENDIVE, MONT.—A certificate of increase of capital stock was filed recently by the Montana Eastern Telephone Company, increasing capital from $15,000 to $60,000.

MURRAYSVILLE, PA.—The Murraysville Telephone Company has increased its capital stock from $5,000 to $10,000.

CONSTRUCTION.

DEMOPOLIS, ALA.—The Demopolis Telephone Company has decided to build a line from this place, connecting Coatopa, Belmont and Forkland with this exchange, and this line will give long distance connection also. Mr. Carter, of Atlanta, has charge of the work of the construction of this line.

CHARLESTON, ARK.—Dr. Keith E. Hudson, president of the Franklin County Telephone Company, is at present engaged in going over the lines of the system, having new poles set, and everything in connection with the system at Branch, Ark., put into first class condition.

LEE MOUNTAIN, ARK.—A new telephone system is being built from W. T. Jones' to Dover, and the company is known as the Walnut Valley Telephone Company. The stockholders of the company are D. J. Cloud, S. A. Hendricks, D. H. Hickey, J. Brown, G. A. Cloud, N. A. Wallace, D. P. Freeman, R. E. Leavell, Robt. Harvill, Green Partain, R. L. Brashears, Alex Hardcastle and Isaac Partain.

KNOXVILLE, ILL.—The Union Telephone Company is installing a new and improved switchboard in the central office at this place. This is just the beginning of the complete reorganization of the Knoxville telephone system.

NEBRASKA, IND.—The Home Telephone & Telegraph Company has completed the laying of the new underground and overhead cables in Bloomingdale and is now ready to begin a similar process of work in Nebraska. The work done in Bloomingdale will very materially improve the telephone service in that district and the residents are very well pleased with the efforts of the company to give them the best possible service. William Moellering, president of the company, issued a notice recently that the company has completed a through circuit direct to Indianapolis and also a through direct circuit to Sturgis, Mich. These new circuits will assure quick and reliable service to both of these points.

DYERSVILLE, IA.—The Inter-State Telephone Company is making a number of substantial improvements to its system in this place. A copper and lead cable has been installed on its line to West Dyersville, which will overcome the trouble caused to the open wires by storms.

MARSHALLTOWN, IA.—At a meeting of the stockholders of the Farmers & Merchants' Telephone Company of this city, who comprise some of the best known Independent telephone men of the state, it was announced that work on the new $150,000 plant of the company here would begin at once. A. C. Hawley of Clinton, Ia., who has built many telephone exchanges in eastern Iowa and western Illinois, will have charge of the work.

ABILENE, KANS.—The Union Telephone Company will soon build a trunk line from this place to Salina.

GALENA, KANS.—The Galena Home Telephone Company has purchased a lot on 6th and Joplin Sts., this city, and the building situated on it will be entirely remodeled and used as an exchange building.

HUTCHINSON, KANS.—The B. & B. Telephone Company will soon install a new $6,000 multiple toll switchboard. The toll connections are being changed.

INDEPENDENCE, KANS.—The Home Telephone Company is ordering considerable new construction material, chiefly cable, etc. The largely increasing amount of business within the past two or three years makes the enlarging of the system necessary.

HAZARD, KY.—The Hazard Telephone Company will double-line its main line between this city and Jackson, Ky., a distance of 35 miles, construction to be begun within the next few weeks. From Dwarf, Ky., it is stated that the company will install a switch and build a 12-mile branch line to Vest, Ky., where a connection is to be made with the Hindman Telephone Company's line. D. Y. Combs is manager of the Hazard Telephone Company.

SALTILLO, MEX.—The congress of the state, by recent reports, has approved the contract for the installation of a telephone line which Senor Jose Madero proposes establishing between this place and Torreon. This will bring these two cities into much closer touch in a business way, which will be of great benefit to both cities.

SITKA, MISS.—The People's Telephone Company of Seminary will soon construct a line from Seminary to Sitka.

WHITEFISH, MONT.—Carl Green, owner of the local telephone system, has had plans drawn for a two-story brick building, work upon which is to start at once. The telephone exchange will be located in the building when it is completed.

ALTON, N. H.—The recently organized Home Telephone & Telegraph Company will soon begin the erection of a line from this place to Gilmanton, where connection will be made with the Citizens' Telephone Company.

EAST LAS VEGAS, N. M.—Reports in the East Las Vegas papers state that within a few days the construction of over 10,000 miles of telephone wires for the operating of the entire Santa Fe system will begin. Two big copper wires will be strung from Denver, Colo., to Pueblo, and stations installed at each block signal station. One of the wires will be used to operate trains going in one direction and the other for the trains going in the opposite direction. The company made its decision for the use of the telephone after it had been successfully tried out on the line between Emporia and Kansas City. The system will not supplant the telegraph but will be suppplementary, and it is claimed that the safety of operating trains will be much greater since the operators will be enabled to be in touch with each other constantly, backed by the block light system.

GOUVERNEUR, N. Y.—A new telephone line is to be constructed from this village to the plant of the Uniform Telephone Company, which is now being built in Talcville. The work will be commenced at once. Considerable repairing will also be done on the system.

ILION, N. Y.—The Home Telephone Company is extending and enlarging its system at this place, to the extent of $75,000 in cost. The system will be entirely remodeled so as to give the people thoroughly modern service.

NEW SALEM, N. D.—L. D. Richardson, general manager of the North Dakota Independent Telephone Company, of Fargo, accompanied by F. L. Shuman, district manager of Bismarck, visited this place a short time ago. They were making final arrangements for the erection of a building for a central office, changing the system to one that will give better service.

FLUSHING, OHIO—The Flushing Telephone Company contemplates purchasing a new building and installing a new switchboard in this city. The company also expects to install a cable system in New Athens.

PORTLAND, ORE.—A telephone line is being built from Sandy along the Mount Hood road through the Toll Gate and beyond by the Government. Poles have been distributed along the road and the holes have been dug. It will prove a great advantage, as there is no telephone line beyond the Sandy except to Ashoff's place. The new line will pass near all the principal resorts on the Mount Hood road. It will be used mainly by the forest rangers to keep the Portland office in touch with conditions in the reserves during the summer, when fires are prevalent. The line will probably be completed by September.

NEW WILMINGTON, PA.—Since the beginning of the current year the New Wilmington Telephone exchange has erected about 19 miles of new rural pole line and has strung about 35 miles of metallic circuit line.

THOMASVILLE, PA.—The Thomasville Telephone Company, a recently organized concern, has completed the construction of its lines.

YORK, PA.—The York Eastern Telephone Company, an independent organization, has been expanding its lines and service in the county to a great extent. A new switchboard was installed in the exchange in Brougueville and over a hundred telephones are connected with this exchange already. The company has a large waiting list for service in this section, and with a large force of installers and linemen, these contracts are being taken care of as quickly as possible.

WEST SHORE, PA.—The West Shore Telephone Company has begun connecting up its system with the telephones across the river that have been operated by the American Union Company, and within a short time Lemoyne, New Cumberland, Camp Hill, Wormleysburg, West Fairview, Shiremanstown and other towns in the Cumberland Valley may be reached by the new service.

SUMTER, S. C.—The Sumter Telephone Company intends to install a common battery in its exchange, which will do away with the small batteries required for each telephone. The cost of this improvement will be in the neighborhood of $25,000.

KENOSHA, WIS.—The Northwestern Railway Company is installing a train dispatching system, which will include Kenosha and other cities along the north shore. Systems are also being placed at Waukegan, Zion City, and on up to Fond du Lac.

KAMLOOPS, B. C., CAN.—The Board of Trade is considering the advisability of building a long distance telephone line to Grande Prairie as neither the B. C. Telephone Company nor the provincial government can be induced to do so.

ELECTIONS.

PEKIN, ILL.—At the annual meeting of the Citizens' Telephone Company held a short time ago, the report giving the conditions of the company, which was read, proved to be very satisfactory to all the stockholders. The system was greatly improved during the past year, and more improvements are considered for this fall. All the old officers and directors of the company were re-elected, and are: President, James W. Barrett; secretary-treasurer, John Fitzgerald; manager, George W. Glass; directors, V. P. Turner, Henry G. Herget, John Fitzgerald, E. R. Peyton, W. B. Cooney, Jacob Roelfs and J. W. Barrett.

TAMPICO, ILL.—The Tampico Farmers' Mutual Telephone Company was reorganized under a new charter at the recent stockholders' meeting. The following officers were unanimously elected: President, L. A. Wheelock; secretary-treasurer, John H. Daley. Directors, N. L. McKenzie, J. L. Darnell, A. A. Shere, J. W. Olson, Fred Brants, C. W. Foy and Fred Van DeMark.

WAVERLY, ILL.—Directors of the Waverly Telephone Company met recently and elected officers for the ensuing year. H. F. Deturk is president and manager; M. Vanwinkle, vice-president; A. C. Comoffi, treasurer, and A. L. Hamilton, secretary.

AMERICUS, KANS.—Directors to serve the Americus Telephone Company in the place of two men who resigned on account of leaving the place, are A. L. McCosh and N. B. White.

PARIS, MO.—Officers elected to serve the interests of the Farmer's Mutual Telephone Company for the ensuing year are: President, W. S. Wiley; vice-president, J. F. Smizer; directors, Frank Snell, Steve Ashcraft, W. H. Scott, T. W. McCrary and R. A. Alexander.

MAYVILLE, N. Y.—V. A. Kent, Samuel C. Crandall of Westfield, George H. Frost of Buffalo, Edgar J. Griswold of Mayville, George W. Appleby of Watts Flats, Alton H. Appleby of Jamestown and A. H. Sheldon of Sherman were the directors elected by the stockholders of the Mayville Telephone Company at a meeting held a short time ago. A number of shares of stock which had not heretofore been disposed of were issued at this meeting, making the total number 150.

PLATTSBURG, N. Y.—The Clinton Telephone Company has chosen the following directors: Hon. J. M. Wever, I. Merkel, A. Sharron, L. W. Hayes, B. S. Ramsay, George H. Rymers, L. R. Coughtry, Howard Hendrickson, T. M. Brush, L. H. Griswold and E. M. Woodward. The directors have elected the following officers: President, Hon. J. M. Wever; Vice President, I. H. Griswold; Secretary, A. Sharron, Treasurer, A. Merkel. The reports of the officers showed an increase of two per cent in the net earnings of the company over any year since the date of incorporation.

ONTARIO, ORE.—Stockholders of the Ontario Independent Telephone Company met recently and elected the following officers: H. B. Grauel, president; H. C. Boyer, vice-president; J. Prinzing, secretary; C. E. Kenyon, treasurer and J. W. Thompson, general manager. These with C. J. Sinsel, E. A. Fraser, and A. L. Sproul constitute the board of directors. All excepting Mr. Sinsel are residents of Oregon, and Mr. Sinsel comes from Boise, Idaho. Independent lines will be constructed throughout Oregon and Idaho, and it is hoped to have them in readiness for service within three months.

CHAPIN, S. C.—The annual stockholders' meeting of the Chapin Telephone Company was held a few weeks ago. The following officers were elected: President, J. S. Wessinger; vice-president, S. D. B. Lever; secretary, W. P. Yetchman, and treasurer, J. S. Boozer. This company has built up very rapidly. It was organized about a year ago and started with but a few miles of line. It now has 104 telephones and about 75 miles of line, and within the next year the company expects to cover most of the territory in the Dutch Fork in Lexingon county.

MISCELLANEOUS.

PARADISE, ARIZ.—In three months, it is stated, it will be possible to talk from the saw mill, six miles from Paradise, to Globe, Courtland and Douglas. Such is the calculation of Forest Ranger Stuart, who is in charge of the telephone construction work now being accomplished on the Chiricahua National Forest by the government.

LITTLE ROCK, ARK.—It is reported by Manager P. C. Ewing of the Little Rock Telephone Company that B. F. Kendrick of the Pine Eluff Independent Telephone Company had been in Little Rock with a view to purchasing and consolidating the two companies and installing an automatic system in these two cities. While nothing definite has been done in the matter, Mr Ewing is expected to submit a proposition within the next few weeks which will be considered.

DAYTONA, FLA.—The question of granting a franchise to the East Florida Telephone Company, of Daytona, was voted upon at a special election recently and was decided in the affirmative. The company will at once commence work on improving the telephone service in Daytona and the Peninsula points, which has long been needed.

HAILEY, IDAHO.—The application of C. E. Woods, forest supervisor, for permission to construct a telephone line along the county road north from Ketchum, has been approved.

LOVINGTON, ILL.—The Merchants & Farmers' Telephone Company of Moultrie, which was organized at this place recently, has purchased Mr. C. A. Gregory's holdings in the Gregory Telephone Company. Wm. O. Neff is president and Edgar S. Jones treasurer of the new company. While the plans for the future are not fully developed, the next few weeks will be spent in improving the present system. If at all possible, the rates will be lowered and the system operated more on a mutual plan. It is stated that Mr. Gregory's reason for selling is that he desires to devote his time to other matters; that the property has always been a very paying one and the prospects for the future are very bright.

NEOGO, ILL.—The Neoga Telephone Company has been purchased by Dr. S. E. Bigler of Sigel.

PEKIN, ILL.—The Farmers' Mutual Telephone Company, which was organized about a year ago, through the efforts of Frank J. Wilkins, is now rapidly nearing completion and over 600 telephones have been installed. Recently an exchange was opened by the company in Morton and 60 telephones were installed, only one of which was solicited. It is anticipated that before long all the farmers in the country around, Groveland, Morton, Tremont and Hopedale will be connected with this exchange. At a meeting of the stockholders to be held September 13th, the proposition of the Union Independent Telephone Company of Pekin, in which the company offers to sell its system to the Mutual company, will be taken up and discussed.

SANDWICH, ILL.—At a recent meeting of the city council, the petition requesting a franchise for the construction and maintenance of a telephone system in this place, made by the Farmer's Telephone Company, was taken up, and with one or two very slight changes was passed.

WOODSTOCK, ILL.—The Spring Grove Telephone Company is endeavoring to secure a franchise granting it the privilege of constructing a telephone system in this town. The granting of the franchise seems to be much favored, as such a line would give the town of Woodstock outside connection. The Spring Grove company connects with the Interstate at Huntley. This company was organized a few years ago at Spring Grove and has a capital of $10,000. It is stated that the name will possibly be changed to the McHenry County Telephone Company and

the capital increased materially, within a short time. The company has exchanges at Spring Grove, Richmond, McHenry, Wilmot and Greenwood.

BOWLING GREEN, IND.—At a meeting held by the directors and others connected with the local telephone company of Bowling Green, Ind., it was decided to connect its system with the Independent Telephone Company's system at Brazil. This will not only place the Bowling Green system in the best condition it has known since its construction, but it will add strength to the Brazil system, which includes practically every telephone in operation in Clay county. A new trunk line will be built between the two points and other improvements made. This agreement is a victory for the Independents since the opposition has been making overtures to the Bowling Green company for some time. The directors, however, discovered that the opposition had a very few telephones in operation in Clay County, and that it had practically abandoned the Brazil field and readily voted to connect with the Independent system.

COVINGTON, IND.—The Covington Telephone Company suffered heavy damage from a severe electric and wind storm recently. With the exception of one long-distance telephone line, all of the telephone lines in the county were thrown down. The expense of making repairs and renewals will be heavy.

FORT WAYNE, IND.—At present the Home Telephone Company is busy installing private exchange systems in various hotels and large business houses in the city. A system of thirty-two telephones was installed in Alt Heibelberg, a new hotel, and the Lincoln Life, and the Portland Apartment House will be equipped. Anthony, Wayne and Randall hotels have been equipped and many smaller concerns have been furnished with this class of service. President Moellering announces that the long distance line to Indianapolis will be completed very shortly.

LAFOUNTAINE, IND.—A fire which destroyed a number of buildings in this place included the telephone exchange and the equipment of the Lafountaine Telephone Company.

NEW RICHMOND, IND.—A short time ago contracts were entered into in which the New Richmond Co-operative Telephone System becomes a part of the McNeil Telephone Company, and the company, after September 1, will be known as the New Richmond Telephone Company. Mr. McNeil, owner of the plants, is contemplating making many changes and improvements to the systems.

WOODBINE, IA.—The Woodbine Telephone Company has moved into its new exchange building. This is said to be a very modern exchange, and as nearly fireproof as money and material can make it. The present owners of the company are M. A. Reed, H. A. Kinley, G. H. Kibler and S. B. Kibler, and exchanges are operated at Woodbine, Dunlap and Logan.

HOWARD, KAN.—The O. B. Walker Telephone System was sold at a mortgagee's sale a few days ago and was purchased by J. A. Middlekauff of Douglass. This system includes the Howard system, the Severy system, the toll lines between the two places and the Moline toll line. Dr. J. H. Close will be the manager. The telephone exchange was doing a very profitable business, but the debt was too much for Mr. Walker to handle.

STOCKTON, KAN.—The Stockton telephone plant and the franchise, owned and operated by T. M. Cooper, have been purchased by Snyder Barber of Alton, and possession will be taken by the new owner on September 1.

GLASCOW, KY.—The Tompkinsville Home Telephone Company has closed a deal with the Glascow Home Company, giving it communication with the outside world. Connection of lines is made at this place.

SAULT STE MARIE, MICH.—Great improvements are being made in the telephone line connection by the Temiskaming & Northern Ontaria railroad commission. In connection with the new passenger depot, the commission will install a complete switchboard, which will give a thoroughly adequate service to the mines in the vicinity. The telephone is also being extended on the Kerr Lake Branch, and a switchboard will be installed in the new Kerr Lake station. It is hoped ultimately to extend the telephone service the entire distance to Cochrane.

GILBERT, MINN.—A representative of the Mesaba Telephone Company is soliciting subscriptions to service in this city, with a view to the company's building a system.

ST. JOSEPH, MO.—About 2,000 telephones were added to the system of the Home Telephone Company a short time ago, when a contract was closed with the Andrew County Telephone Company for forty-three years. The company has exchanges in Savannah, Avenue City, Cosby, Filmore, Helena, Rochester, Whitesville, Bolckow and Rosendale, and the Home Telephone Company, of which Theo. A. Gary is president, will begin at once to string new lines connecting the system. All the circuits will be copper.

BURELL, NEB.—At a quarterly meeting of the Garfield Mutual Telephone Company two new local companies were voted into the system, being the Carson and the Key companies. It is contemplated to soon build a line to Ord.

ALBANY, N. Y.—The State Board of Tax Commissioners of New York has announced the tentative assessments on special franchises in Albany for 1909. The franchise value of the Albany Home Telephone Company is placed at $125,000, the same as in 1908.

CLINTON, N. Y.—The plant of the Clinton Home Telephone Company, which includes the building and rural lines, has been sold to the Utica Home Telephone Company, at a mortgagee's sale. The Clinton company was capitalized at $20,000.

IVORY, N. Y.—The Ivory Telephone Company has been sold to the Home Telephone Company of Frewsburg. This company has been doing business in Ivory for about six years and the service was satisfactory, but owing to the fact that the Home Telephone Company operated in half of the town, this merger will be a great convenience to subscribers of both systems.

WATERVLIET, N. Y.—One of the most important financial projects ever undertaken in Watervliet was consummated when the Watervliet Home Telephone Company was merged into the Commercial Union Telephone Company of Troy. The transfer of the Home telephone service to the Troy company means much of interest to the residents of Watervliet. While the merger is already complete yet it will be thirty days before the contemplated improvements to the local service are made. A large sum of money will be immediately spent for the improvement of the local service and this it is expected will attract many new subscribers, while at the same time it will please the Troy subscribers who need the Watervliet service in their business. It is believed that within thirty days of the taking over by the Troy company of the Watervliet plant that the list of Watervliet subscribers will have grown 100 per cent or more.

SHARON, PA.—The Central District and Printing Company, recently secured a favorable decision in a case brought against it by the Borough authorities of Sharon, in which they were seeking to force the telephone company to greatly enlarge the radius of free service before allowing it to connect up with the switchboard in the new building in that place. The litigation cost the Borough somewhere near $8,000, it is stated.

HURLEY, S. D.—The Hurley Farmers' Telephone Company, which was organized eight years ago by about a dozen farmers, who desired connection with town and with their neighbors, has steadily grown till it now has over 400 subscribers and nearly 400 miles of rural line and poles. It owns the local exchange in Marion and has offices in Hurley, Parker, Viborg, Irene and Freeman. The company has been wholly managed by the farmers, and they take great pride in its success.

HURON, S. D.—The Dakota Central Telephone Company will soon commence the erection of a new exchange building, and after that a complete new and modern system will be installed. The building will be a two-story brick, the inside of reinforced concrete. The most modern type of automatic system will be installed, and all wires within the city fire limits will be laid underground.

OLSEN, S. D.—About five years ago the farmers in this neighborhood decided they would form a telephone company and construct a system. They commenced operation with one line and a dozen subscribers in 1904, and at the present time the company, known as the A. B. & E. Telephone Company, has 26 circuits and 255 rural telephones.

DALLAS, TEX.—The Dallas Telephone Company has asked permission of the city authorities to lay conduits for its telephone wires.

EL PASO, TEX.—A clipping from the El Paso Herald reads: In 1902 there were 266,000 rural telephone stations; in 1907 there were 1,500,000. The increase since 1907 has been rapid and it is estimated now that more than one-third of all the farmers in the United States have telephone connection. In the Western States, especially, the rate of increase has been marvelous, there being 30 times as many rural telephones today in the Western States as there were seven years ago.

SHERMAN, TEX.—Several months ago when the property of the Grayson Telephone Company passed into the hands of a receiver, it was announced that this move was made for the purpose of reorganizing the company. All arrangements for this have been made, it is reported, and already orders for material needed for the preliminary work have been placed and construction of an enlarged system will be begun possibly about September 1. This move of enlarging the system is made necessary by the waiting list for service of over 300 names in Sherman. The North Texas Telephone Company is to take care of the long-distance work and lines connecting Sherman and Dallas will be constructed; likewise a line from this city to Greenville.

PUYALLUP, WASH.—Manager J. A. Colby of the Puyallup Home Telephone Company announces a most gratifying and satisfactory growth to the system. On an average of 20 telephones are being installed each day.

WINNIPEG, MAN., CAN.—The Manitoba Government Telephone Commission has decided to divide the province into districts, each of which will be under the direct charge of a manager. Each district will be managed under three heads—commercial agent, superintendent of plant and superintendent of service. The new system goes into effect on Sept. 1.

WINNIPEG, MAN., CAN.—The Canadian Pacific Ry. is now partially operating its trains between here and Brandon, Man., a distance of 133 miles, by telephone. The officials claim the system is a success.

PARIS, FRANCE.—In appointing M. Millerand as Minister of Public Works, the new Government has placed him in direct personal control of the Department of Posts and Telegraphs, which was previously headed by an Under-Secretary of State, M. Simyan being the last to hold that appointment. M. Millerand states that his first aim will be to reorganize the telephone service.